DOCUMENT RESUME

ED 224 016 CS 207 242

AUTHOR	Broudy, H. S.
TITLE	Report on Case Studies on Uses of Knowledge.
INSTITUTION	Spencer Foundation, Chicago, Ill.
PUB DATE	1 Dec 82
NOTE	130p.
PUB TYPE	Reports - Research/Technical (143)
EDRS PRICE	MF01/PC06 Plus Postage.
DESCRIPTORS	Case Studies; Educational Experience; Educational Philosophy; Educational Research; Graduate Students; Higher Education; *Knowledge Level; *Prior Learning; *Self Evaluation (Individuals)

ABSTRACT

Case studies of eight graduate students were designed to seek indirect evidence for the role of explicit and tacit knowledge in interpreting a series of reading selections. The general hypothesis was that formal schooling would be used in nonschool and postschool situations in the following ways: (1) replicative--a situation that elicits a school input pretty much as put in; (2) associative--a situation that elicits a response that in some way is connected with the situation; (3) interpretive--a situation that requires a translation into a set of concepts; and (4) applicative--a problematic situation or predicament that calls for a solution or a hypothesis as to what could solve the problematic situation. Of the six reading selections, one was a poem and the other five were excerpts that presumably a college graduate would be able to read with "understanding." Responses by the eight graduate students varied in many ways, but it was quite clear that in every selection the four uses of their schooling were illustrated. Associations of all sorts were aroused with their sources in books that had been read, childhood experiences, and reports in the daily press. Applicational uses were fairly rare and impressive only in those instances where the graduate studies were in the same field. As to interpretation, it was quite obvious that not having had courses in that discipline revealed itself. Personal interests or ideologies tended to be the core of the interpretation and judgment rather than the contexts of the disciplines. (HOD)

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REPORT

On

CASE STUDIES ON USES OF KNOWLEDGE

To The

SPENCER FOUNDATION

December 1, 1982

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY
H. S. Broudy
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THE USES OF SCHOOLING

Formal schooling has usually been regarded as an investment. As such it is expected to yield a return on the time and money invested. In our country young people are compelled to spend ten or more years in school and for an increasing proportion of the adolescent population schooling may account for as much as 16 years--as much as 20% of an even long life. This is no mean investment in time alone and not counting direct and indirect financial costs. Little wonder, therefore, that so many expect so much from formal schooling and are disappointed when these expectations are unmet.

Disappointment is tinged with puzzlement. That so obvious a connection between school learning and life success is so often not made tempts one to wonder about the connection itself. In this puzzlement the art and science of pedagogy were born.* Is it the kind of knowledge that makes a difference? Is it perhaps the way the learning is conducted? Or does everything depend on a native endowment that schooling can only modify within modest limits?

That neither the art nor the science of pedagogy has ever been able to produce reliable and consistent results for large and heterogeneous populations prompts the conjecture that perhaps we have not

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*Why, Socrates wanted to know, if virtue can be taught, are so many eminently virtuous fathers disappointed in their sons? To which Protagoras responded with explanations that are currently being discovered by social science research.

formulated our expectations properly. Perhaps the straightforward question: What knowledge is of the most worth, and what school maneuvers will produce it? is too cryptic and lends itself too readily to ambiguity, despite its tempting appeal to common sense. And if we insist on the answer taking account of the indefinite, if not infinite, number of individual differences, the question might just as well remain unasked.*

One way of exploring the issue is to anticipate the uses to which schooling is put. On the instrumental view of education--and schooling if not education is always so construed--the criteria are sought in adulthood. Rewarding as each learning experience may be at the time it is achieved, and despite the attractiveness of John Dewey's dictum that the only goal of education is growth and the only goal of growth is more growth, a public system of schooling is pragmatic in the more worldly sense. The public wants a payoff in a whole range of values: economic, health, citizenship, recreation, associational, intellectual, moral, religious, and esthetic, i.e., all the ingredients of the "good" life.

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*Somewhere along the line of pedagogical inquiry, the obvious fact of individual differences was converted into the dogma that the curriculum and the methods of teaching, as well as modes of school organization, should meet these differences. It is a self-defeating dogma that dooms all formal systems of schooling to failure.

When success in life, i.e., the value recipe, is well defined, the school can tailor its offerings to the expectations of its clientele. This occurs when a social class dominates the success routes of the culture. The values of this class automatically define the good, the true, and the beautiful, and whatever style of schooling this class chooses for its children is ipso facto "quality" education. To a considerable extent the public school accepts this criterion of quality and tries to provide a fair imitation of it, e.g., in the college preparatory curricula of the secondary school.

When, however, the clientele of the public school becomes highly varied and the success routes of the culture also vary, the public school responds with efforts to accommodate the differences in expectations. Quality loses its univocal meaning and the connection between formal instruction and life success becomes ambiguous and unclear.

The method and logic of selecting school input to match life outcomes is a triumph of common sense, and would never have attracted any special notice had there not been those who seemed to doubt it. What could be more obviously sensible than to list the desired outcomes in life and then to teach what presumably would produce them, and finally to check the procedure when the pupil reaches adulthood. This is the model for efficiency studies in commodity production, and it makes so much sense (common sense, that is) that the leap to the principle: "Do not teach anything that will not be used!" is inevitable. Hence, if as Thorndike discovered, the American adult population uses a vocabulary of no more than 10,000 words, there is no point in teaching words

not on that list. And the same would apply to learning the spelling of words not commonly used, mathematical principles not commonly used, ideas not commonly used, etc. etc. Everything in the argument depends on the accuracy of the initial analysis of uses and the corresponding school ingredients, on the one hand, and the assumption that in life use only that which can be identified with a particular school input is functional, on the other.

Clearly, some school inputs are more easily matched with life uses than others. Specific skills, for example, are more easy to trace than nuances of language. How to use a hammer or chisel is pretty much the same in adult life as when it was learned. Facts, formulae, poems, and the like, if learned by rote and overlearned by prolonged drill are retained and used pretty much as learned throughout adulthood. This is a predictable outcome, especially if frequent use reinforces the initial learning. Much less predictable are the uses to which the various disciplines we study in school will be put. What life uses can we predict of our study of geometry, French literature, English history, general chemistry?

It is no mystery, therefore, that general studies or liberal studies are viewed with hesitation by those who judge investment in schooling by predictable results. Once the mystique of such studies is stripped of elitism and tradition, they become vulnerable to the demands of the success routes of the day. They must either demonstrate that they give reliable promise of contributing to the varied criteria of success or give up their place in the curriculum.

Needless to say, general studies, general education, and liberal education have lost much of their market appeal under the hard scrutiny

of educational accounting. This could be expected. Why, then, do educational institutions and pockets of the citizenry feel guilty about the situation? Why do universities every 25 years or so mount a vigorous drive to restore general education when they know that their faculty have no real interest in it?

This anomaly prompted the consideration of the possibility that matching life outcomes with school inputs was not a matter of simple equivalence. Clearly, this was an appropriate way of judging the learning of a skill such as computation in school and its use in life; but was it appropriate for judging the study of a discipline in school and its use in life?

The replicative use of schooling

For one thing, relatively little of the content studied in the standard disciplines can be recalled at will in post-school life. Even when learned by rote and drill in preparation for examinations, facts, formulae, equations, dates, places, and the like do not stay in memory unless reinforced by frequent repetition. In ordinary life such opportunities for recall are not common. Only if incorporated into professional life do we use them frequently.* General studies do

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*This fairly obvious fact escapes the academic who cannot understand why undergraduates forget so much of what they have studied. Academic erudition is more often the consequence of repetition than genius. It also helps to explain why erudite scholars are not keen on general education for undergraduates. A major in their discipline is another matter, and a good doctoral student is to be cherished and nurtured.

poorly, if judged by the replicative criterion. For another, attitudes that were not explicitly drilled in the study of the discipline seem to emerge in life, for example, the experimental attitude or mild scepticism. What remains after one has forgotten (or cannot recall) the details of a novel by Jane Austen or a play by Shakespeare or the atomic weights of the elements or the formula for the binomial theorem or the observations that led to Darwin's theory of evolution? And if some details are recalled, why these and not others?* What happens to an item of consciousness during a life time is a great and important mystery to which the laws of association give fairly obvious, albeit uninteresting clues. They tell us what almost goes without saying in that they formalize common sense and common experience, but why have I forgotten the French name for the confection (Madeleine) that played a part in Proust's accounts of his early memories? Why does the word "medallions" keep occurring even when I know that it is the wrong one? Is human memory like the memory bank of a computer or is it more like a vat in which all sorts and oddments of experience ferment and yield distillates of various compositions--some wildly intoxicating and some malodorous indeed.

The eliciting of such relatively unstructured and unpredictable responses to a stimulus I call the associative use of knowledge or experience or schooling. Because of the indeterminacy of the retrieval,

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*In Marcel Proust's The Remembrance of Things Past the attempt to reconstruct a personal past became a literary masterpiece on its own account. This famous tour de force might very well be recommended as required reading in courses in education and pedagogy.

we are inclined to downgrade this associative use in favor of more definite and more clearly structured cognitive responses. The systematic study of the disciplines is supposed to reduce the randomization of response. The stimuli 7-6= , 7x6= , and 7+6= should draw different but equally precise responses. Suppose, however, someone is moved to say by way of response, "Things seem to be at sixes and sevens." This is not a "disciplinary" response but an associative one. Is this an incorrect, inept, irrelevant, or humorous response? By imposing the structure of the several disciplines on the stimulus, experience takes on their order, i.e., we think the stimulus with this structure.

If the price of cognitive inadequacy of mind is logical disorder, the inadequacy of the associative function is poverty of meaning. When stimuli elicit a limited set of predictable stereotyped associations (table-chair, dark-light, green-grass, etc. etc.), one can speak properly of an impoverished associative store.*

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*In a number of articles I have argued that the richness of this store (in amplitude, variety, and flexibility) is a potent factor in learning to read and write and perhaps every other subject as well. I have done so because the basics bandwagon seemed to reduce reading and writing to the mechanics of coding and decoding a predetermined set of symbols. On this view, reading is an imperfect imitation of a computer, which properly programmed can be relied upon to give uniform solutions to coding and decoding tasks. To be sure, inability to code and decode symbols, estops all more complex responses to them, so that whoever cannot construe a simple advertisement or a set of instructions cannot read more complex materials. At this point, the public has to decide whether it wants or needs to invest 12 years of schooling, much of it compulsory, to teach people the simplest forms of reading, writing, and computing.

We do not ordinarily assess the value of schooling by its associative use. It is difficult to trace such associational responses to school experience. The fermentation process may have changed the input. Some, like Freud, argued that the associative use is a way of distorting memory so as to elude its true (and shameful) significance. Finally, the associative is not always recognized as a retrieval from a "storage," e.g., as where we say, "That reminds me of ..." even though the style of speech, choice of vocabulary, nuance of phrasing can be explained only by associations the origin of which we cannot identify.

Yet if the relation between the associative use to meaning and other forms of mentation is examined carefully, it may turn out to be the most fundamental of all uses. Any instance of the idiomatic use of language--even in ordinary discourse--discloses the reliance of meaning on implicit associations. For example, the expression, "We worked around the clock" when translated into a foreign language with lexical correctness may nevertheless fail to convey the image of clock "hands" moving around the "face" of the clock (itself a very mixed metaphor). Should digital clocks become the norm, future generations of English-speaking children may also be puzzled by the locution.

Without belaboring the point at this juncture I would like to suggest that the meaning potential of associations lies not only in their lexical identifications (e.g. a clock is an instrument for "telling" time, itself a problematic locution), but also, and perhaps more importantly, in the power of images to carry a freight of meaning on their "face," so to speak. Poetry, of course, depends on import messages via images in the various sense modalities, but so does much of ordinary discourse,

oral and written. Indeed, the effort to rid discourse of "irrelevant" associative encumbrances, is the aim of science, logic, and mathematics, but also of art.

The work of art purports to give precision to portrayals of feeling by utilizing the associative resources of images, linguistic, tonal, tactile, kinaesthetic, visual, etc. How the artist brings this off is partly mystery, partly genius, and partly technique. The mystery is how artistic images that presumably become expressive in and of themselves require associative resources on the part of the perceiver. How, for example, does a tonal pattern become the image of sadness?

The associative matrix of meaning is so ubiquitous that it is rarely at the focus of attention, and if we note it at all, it is by a lack or absence. Such a lack is apparent to anyone who does public speaking, for he knows that everything depends on the audience's associative resources. Allusions to Greek and Roman mythology, the Bible, the plays of Shakespeare fall flat when the audience cannot respond with the relevant words, ideas, and images. It is in this sense that the study of the Classics by generations of schoolboys made it possible to create a rich fabric of discourse, written and spoken, for an "educated" social class. Conversely, as the curriculum is varied to meet real or imagined individual needs, the common allusionary capital is dissipated. Each coterie acquires its own. For the public at large the linguistic and imagic usages of the mass media provide a common pool of allusion, a pool of common meaning.

Whether this is good or not, television creates an allusionary rival to that provided by school learning. In this sense the mass media are competing with formal schooling for the minds of grown-ups and children alike. It is not so much a contest of ideas, views, and judgments (although it is that) as of a struggle for control of the associative resources of meaning--the raw materials of task, judgment, and ultimately of action.

If the associative use of schooling is as potent as here claimed, the assessment of schooling will be skewed if it is not counted in the accountability reckoning, and if tests of school effectiveness are limited to the replicative uses of schooling, it does not enter into the reckoning.

The applicative uses of schooling

Ranking high on the assessment scale is the application of school studies. It has been extolled as the counter to "mere" rote repetition. The latter is cited as an example of pedantic sterility unless applied. "Applied" has both a common and a technical meaning. The common and more generic one refers to adapting skill or knowledge to solving a problem or relieving a predicament. It ranges from using an acquired skill (e.g. writing or computation) to write a letter or to fill out an income tax return, to clever adaptations of skill, familiarity, with predicaments and shrewd appraisals of possible solutions.

People who are good at this application are called handy, resourceful, intelligent. Much of this applicative use involves the

recognition of a situation as being similar to those in which certain ploys were successful. Thus an extensive familiarity with herbal medicine would be "applied" if the practitioners recalled a particular remedy having "worked" in a class of situations of which the one to be cured is an instance. Some situations and applications are ambiguous. For example, given the need to determine the cost of financing a loan over a period of years, one might (a) recollect the principles of percentages, or (b) one might recall and use the formula for calculating percentages (multiply the terms and insert the decimal point at the right place), or (c) one might use compound interest tables, or (d) one might just ask the bank clerk to provide an answer.

This common use of "apply" replicates a learned response in a situation that is recognized as similiar to ones already encountered. The recognition itself may be the result of a perceptible resemblance of a similarity of structure or of an association the source of which may or may not be clear enough for explicit recognition.

School studies are useful in this sense and are expected to be. Enlightened pedagogues assign "problems" to encourage application of facts, relationships, and principles. The end-of-course test may also include items that require not only recall but application. If the student has made an application on the test, it is presumed that he/she has "understood" the item learned and that henceforth he/she will apply it. It is for this replicative sense of "apply" that one can justify heavy doses of rote learning of facts, skills, etc. for example the number facts, the multiplication tables, spelling, some facts of history and geography. It would be tedious to have to look them up each time

they were needed. To recognize a situation as needing x, and to be able to perform x forthwith conserves energy for cogitation in situations that do not lend themselves to this kind of application.

The more technical use of "apply" refers to the hypothetico-deductive mode of reasoning induced by a perplexing situation that does not yield to familiar treatments or to random trials. Here a situation has to be studied to determine what makes it "problematic." This requires formulating an hypothesis as to the causes of the blocked action which this, in turn requires knowledge of generalizations relevant to the situation. There follow the familiar steps of problem solving: if the theory is sound, one can predict that a, b, and c will be the case and that x, y, and z will be appropriate remedies. One tries out the predicted consequences and confirms or disconfirms the hypothesis.

This sense of application differs not only in complexity but in kind from the common brand. For the principles one resorts to study of the disciplines e.g., chemistry or physics or astronomy or thermodynamics or biology or their applied forms in engineering, medicine, and industrial processes of various kinds. Some generalizations are gleaned from experience and common knowledge, e.g., metals expand when heated. Application of principle usually requires a technology that an inventive mind creates, a telescope, a thermometer, a steam engine, and the like. Laypersons use the technology; they do not invent it or reason their way to it or through it. In short, this is the sort of expertise one expects only from the specialist and not from the general public. Having studied chemistry or biology does not make a specialist, because the theoretical principles of a science do not predict their applications. Hence when

the applicative criteria are applied to general education, most of the studies that have been undertaken and on which examinations have been successfully negotiated turn out to be "useless."

One can understand, therefore, the undergraduate's and often the parent's impatience with studies that are not convertible into the making of a specialist, i.e., professionalized or vocationalized. The world of work pays off for a specialized performance, not a general state of mind. Hence the pressure on professional curricula of all kinds to include more "hands on" experience earlier in the training. This is not said as a criticism of the demand, but rather to draw attention to the distance between theory and principles, on the one hand, and familiarity with the technology and its application to concrete instances, on the other. Just as no principle in and of itself indicates the particulars to which it may be applicable or applied, so does not each concrete predicament indicate automatically its own solution to those who have not had extensive experience with both the predicaments and their remedies.

If the student's haste for application is understandable, so is the impatience of the employer, and so also the willingness of professionals schools to meet the demand. And yet in professional school faculties there is now and then a feeling, perhaps the conviction, that there is danger in skipping over theory too readily and too soon. The apprehension is sound, because without the theory to rationalize the technology, the practitioner loses flexibility, creativity, and what is even more significant, the right to pass on the appropriateness of

of practice and of the rules of practice. Without theory the practitioner is limited to rule-governed behavior.

The distinction between the levels of "apply" is more than academic. Solving problems can be reduced to rule-governed behavior. After a while, the speeding train problem is as routine for the student in the physics course as repairing a stopped drain is for the plumber. But as with other rote learnings, only constant repetition keeps them recallable, i.e., useful, and classroom exercises in problem-solving procedures are not repeated often enough to make them useful for the non-specialist.

If the replicative and applicative uses of schooling cannot justify an investment in general education, what in addition to the associative use might be a justification? Are there other uses in life to which such studies are indispensable?

The arguments advanced for the fundamental--almost primitive--associative use should be sufficient to absolve general studies from the charge of elitism and uselessness. Nevertheless, the associative retrieval from the imagic-conceptual store is highly indeterminate and has no ordering principle of its own, at least none that can withstand the cold stare of logic. Can general education be justified by the richness of meaning potential alone? Or must it have ordering principles that render the plenitude and variety of meaning intelligible as well?

But of course general education does teach ordering principles. Indeed, this is their <u>primary</u> claim, viz., that they provide organizing principles of great generality--unmatched generality for animated intelligibility. The question is rather whether and how this generality is

learned and used in post-school life--if not replicatively and applicatively. The answer is "interpretively."

The interpretive use of schooling

To interpret means to translate into an equivalent form as in translating from one language to another. But it also can mean revealing the meaning of X by providing a gestalt or context in which it becomes intelligible. When we fail to understand X it may be because it is in a symbolic form unfamiliar to us, as e.g. written in a language foreign to us. Technical terms constitute a foreign language for the nonspecialist, even though it is written in our native tongue. But we also fail to "understand" a mother slaying her child; or a well-to-do businessman passing counterfeit bills or a brilliant scholar leaving his laboratory to join the circus. We say we do not understand even though there is no linguistic or conceptual barrier.

Our lack of understanding is repaired if we are given a context in which the puzzling act, we say, makes sense. Or, in more technical language, we are given a system of meanings in which an act follows inevitably with decent probability; in which words make an intelligible sentence. Detective stories are familiar examples of seemingly strange and unrelated events becoming clear and explicable once the detective supplies the right context. The several arts and sciences, one can say, provide contexts of images and concepts that make the events of life perceptible in the first place, intelligible in the second, and assessible in the third. The word "meaningful" perhaps covers all three modes of apprehension.

We can now define general studies as producing the stencils of the arts and sciences as diverse context suppliers or resources--stencils that function tacitly to promote understanding. There is much to be said about the relationships among these four uses of knowledge and how time converts formal courses filled with details into schemata from which most of the details have been forgotten--or at least not recallable at will. The reconstruction of long strands of experience presents serious methodological difficulties. Perhaps the effects of lack of formal study is more manageable.

The interpretive need and use of knowledge is attested by professional curricula. Although skeptical about the study of anything not to be used applicatively, professional schools prescribe as pre-requisites courses the application of which is not anticipated. For example, not all engineers, physicians, and lawyers will "apply" mathematics (beyond algebra), physics, biology and chemistry, yet professional schools do prescribe them. That lawyers may need political science to interpret law to solve problems is easily understood, but that engineers and medical personnel had better study political science and moral theory is only now coming to be understood by the professional schools.

Professional school faculties in recent years have discovered that their traditional curricula did not anticipate the new problems and constituencies of their graduates. For example, an engineer thoroughly trained to do his job finds that writing environmental statements and arguing environmental questions with ecological lawyers and ardent conservationists was not in the engineering curriculum when he took his degree. Law, architecture, medicine, among others, find themselves enmeshed in

socio-philosophical issues that they can no longer dismiss as none of their business. Was the rejection of the separate-but-equal doctrine by the Supreme Court in 1954 a legal, sociological, psychological or ethical issue? Malpractice suits have remoralized the professions.

Perhaps the election of 1980 was a backlash at the comingling of so many issues, so that the pledge to restore business to business and to allow the allegedly free market make all value decisions seemed like a relief from complexity and morals. But the professional schools rightly suspect that they cannot turn the clock back. The issues are mixed because reality is mixed, and the graduates will have to learn to mind everybody's business in order to mind their own.

The first response to the new needs is the introduction of new courses to the professional curriculum--and a number of law schools now have sociologists and social psychologists on their faculty--or to require courses in the social sciences or the humanities as professional pre-requisites. One would have thought that the undergraduate in the American college would already have taken such courses as general education requirements. That would be a mistake, because there is so little uniformity in the general education requirements even on the same campus. Moreover, not all courses labeled sociology or philosophy will be "of use" to the engineer, lawyer or physician.

A more productive response to these new professional needs might be to ask how the supplementary knowledge would be used in professional practice. Clearly the engineer is not envisioned as a professional sociologist or psychologist or philosopher. In other words, they do not anticipate the applicative use of sociology or the other new disciplines.

Nor do they think that an associative use of general meanings and suggestions would be sufficient. They are looking for what we have called the interpretive use of knowledge or schooling.

To return to the professional curricula, the graduate needs applicative use of many subjects, but he needs the interpretive use of other disciplines. The need is for contexts relevant to understanding the non-engineering aspects of engineering. Each intellectual discipline is a distinctive context or, if you like, a stencil that reveals distinctive aspects of a problem; a phenomenon, any piece of existence. The stencils we call biology, chemistry, physics placed on the same bit of lung tissue yield different descriptions; and each is a form of interpretation or understanding. The engineer needs to use the sociology stencil in order to be able to speak of an engineering problem as a sociologist would, but he does not have to do sociological research--he does not have to make the stencil.

If this hypothesis has any plausibility, the lack of formal study of a discipline should create a block or distortion in materials that presuppose acquaintance with the context that that discipline provides. Furthermore, the associative response to such materials should betray the residues of formal studies the details of which may not now be recallable. Or the absence of such residues, if not studied or otherwise encountered.

As an exploratory attempt to check this hypothesis, we designed eight case studies in which eight graduate students with differing undergraduate majors were asked to respond to six relatively short bits of materials dealing with many topics. One of these was a poem; the other

five were excerpted from a metropolitan newspaper; materials that presumably a college graduate should be able to read with "understanding." We did not try to trace the responses to items in the autobiographies of the subjects, but the range and diversity of the responses gave us reason to believe that the hypothesis was not implausible and is worthy of more systematic investigation.

The responses by the eight graduate students vary in many ways, but it is quite clear that in every selection the four uses of their schooling were illustrated. Some could recall a content or concept of a course taken in high school or college, some could not. Associations of all sorts were aroused with their sources in books that had been read, childhood experiences, reports in the daily press. These seedbeds of association varied greatly in range and depth and in the fluency of their reporting. Applicational uses were fairly rare and impresaive only in those instances where the graduate studies were in the same field, e.g., religious or literary studies. As to interpretation, I think it fairly obvious that where a selection required the instantiation of of formal concepts and methods of a discipline, not having had courses in that discipline revealed itself. The articles on the economy, archeology, astronomy, neutrinos, and the modern dance elicited associative responses for the most part unless formal work had been taken in the respective field. Personal interests or ideologies tended to be the core of the interpretation and judgment rather than the contexts of the disciplines.

It would be difficult to evade the conjecture that these eight young people responded to the selections as a great portion of the "educated" electorate does and that the claim that the baccalaureate programs through which the

"educated" classes presumably pass provide them with the content building resources that one thinks an educated electorate in a democratic society should have and which colleges implicitly promise. The elective system virtually assures great variations in both understanding and the lack of it; in a world such as this, it would be hard to designate disciplines that are not needed for the enlightened interpretation of what happens by the citizen, a citizen who will use the disciplines for interpretation and enriched association rather than for professional application.

The study was undertaken with the help of the Spencer Foundation and I am indebted to Alan C. Purves, director of the Curriculum Laboratory of the College of Education at the University of Illinois for help in making the selections and meeting with Dr. Shirley Johnson and myself weekly to interpret the responses.

PLAN FOR INTERVIEWS Shirley Johnson

8 subjects
$15 pay per subject (for total interview time)
4 hours of interviewing, total, per subject (approximately)
includes 2 hours (approx) stage #1, self-report without interviewer
and (approx) 2 hours of follow-up
audio-recordings and preparation of protocols

Stage #1:

This will be self report and introspection by the subject in which the subject will be provided with printed text(s) (one text at a time) and asked to sit alone in a room, talking into a tape recorder about whatever thoughts occur in relation to what is read.

Procedure:
1) Interviewer will ask the subject a schedule of demographic questions and this will be recorded on the audio recorder.
2) Interviewer will read a set of prepared instructions to each subject including an injunction to
3) Make the subject aware of a sheet of additional self-questions and instructions that the I. will leave by the tape recorder.
4) Interviewer will then leave S. alone with a written text and I. will wait outside the room.
5) When Subject has finished with a text, the subject will appear at the door and I. will give S. another text, with a reminder to try to tell everything S. thinks of, until satisfied S. has adequately described all thoughts.
6) At end of (approximately) one hour, when S. has completed a text, the interview will be ended.

The above will be repeated at a second stage #1 interview after the follow-up interview for the 1st session has been done.

Stage #2:

This will be an interview conducted by the interviewer, for which the interviewer will have 1) a schedule of prepared questions relating to specific items within certain texts and 2) certain specific questions relating to items the subject has talked about during the stage #1 interview and 3) other general open ended and probe type questions, where this seems appropriate.

Procedure:
1) Interviewer will listen to tape of stage #1 interview.
2) I. will create a table of contents for the tape, noting numerical location on the tape and creating a general content description of topic of S.'s remarks.
3) I. will identify the total length of time S. spent talking about each individual text.
4) Note location on tape (number) and write specific question(s) to be asked about S's remarks.
5) Conduct follow-up interview

- ask S. the scheduled questions (to be asked of all subjects)
- ask questions prepared for follow-up specific to this interview (chronologically)
- use additional probe and open-ended questions as needed

INSTRUCTIONS (to be left next to the tape recorder with the subject)

You may:

read silently and then talk

talk as long as you like

make any sort of comments you think of about what you read

use the questions below to explore your thinking, if you need to:

1. What was the text about?
2. Would you like to read the rest of it?
3. What does it suggest to you?
4. What does this make you think of?
5. Describe everything you thought of.

Be sure to:

read aloud the line to which you are referring, before talking about your thoughts; be sure you are satisfied that you have adequately described your thinking; call the interviewer when finished.

Thank you

SELF REPORT INTERVIEW

(Instructions below will be spoken verbatim to the subject with the audio recorder on).

1. Name?

2. Age?

3. Present field of study?

4. In what field was your bachelor's degree? Minor areas?

5. Have you had courses in:

   poetry?
   art?
   aesthetics?
   physical sciences?
   life sciences?
   (other re: specific texts used in the study)????

6. What kinds of things do you read for relaxation?

7. Can you think of any book you've ever read or course you've taken that was very influential in your way of thinking...that really turned you around?

8. I will give you a text to read and I will leave the room while you read it and tell about what you were thinking as you read it.

   So, you will be here alone with the tape recorder.

   And, you will be expected to read passages of different kinds.

   When you are ready, read a line aloud for the benefit of the tape recorder and then describe the ideas that came to you as you read.

   You may begin to talk as soon as you begin to read, if you like.

   It will be all right for you to reread a passage, parts or all of it, to recapture your thoughts.

   Try to read briefly and then begin to talk.

   Read aloud...a line at a time and talk as you do.

   You may be as literal, as interpretive, as critical or as associative as you feel is satisfying in relation to the meaning of the passage to you.

   You may talk about any ideas that come to you for as long as you like.

   Be sure to talk long enough so you feel satisfied that you have adequately described what came into your mind as you read.

9. On this sheet next to the recorder are some suggested questions that you may use, if you need help in exploring your thinking.

   You do not have to use the questions, unless you get stuck and can't think of anything else to say.

   Please talk about the passage as long as you can.

   Talk until you are satisfied that you have described what came into your mind about what you read.

   When you are satisfied, move on to the next line of the passage and tell what you think about it.

10. I will be right outside the room. When you have completed the entire text, and cannot say any more, please call me and I will give you the next passage to read. I will be waiting right outside.

(Be sure to check to see the recorder is running after leaving the new text, in case the subject turned it off, before calling the interviewer).

FOLLOW UP INTERVIEW

I. Schedule of questions (uniform across subjects):

(related to specific words and/or passages in the texts):

1. Did this (specify the word or passage) suggest an image when you read it?

   Does it suggest an image now that you did not get when you first read it?

2. Can you tell me what (specify line or words) is about?

   (Follow-up probe questions:
   Where did you learn about? specific book or course(s)?
   What does that suggest to you?
   How might you use that information?
   Why or why not?

3. Can you recall where or when you learned to think about (specify line or words) in this way? (items in which subjects discuss similarly)

II. Other probe questions (specific to each subjects discussion)

1. <u>allusions</u> to other learnings:
   What did you think of as you read this?
   Did this cause you to think of any book you've read or course you've had?
   What was it? How is it related to this passage?

2. <u>structures</u> of approach:
   Can you think of when or where you learned to think about (item) in this way?
   Can you think of any other ideas related to that (source of learning)?

3. <u>emotional</u> sets
   Did you have any images about this?
   Can you tell me more about what you meant when you said (emotional statement)?

4. <u>interpretive</u> thinking:
   What does this (passage, line) mean to you?
   What can you say about this....it's meaning?
   What do you mean by (what you just said)?

5. <u>applicatory</u> thinking:
   How might you use this information? Why or why not?
   (Why not should lead to criticism of the item).

Probe questions:

What came (comes) to your mind as you read this?

What else did you think of? What else can you say?

Can you tell any other ideas related to that?

What else?

Is this idea related to anything else you've ever read or studied?

What does it mean?

What can you say about this?

Can you think of any other ways you could interpret this?

Any other particular lines you might comment on?

Are you satisfied with your description of your thinking?

THE USES OF KNOWLEDG AND SCHOOLING

The eight case studies being done in this project are designed to seek indirect evidence for the role of explicit and tacit knowing on a series of reading tasks. The general hypothesis is that formal schooling may be used in non-school and post-school situations in the following ways:

Replicative

A situation S elicits a school input pretty much as put in. For For example, the S being 7+6=?, the response is the replication of an input learned as one of the number facts. Much of what is called rote learning is replicative in use.

Associative

A situation S elicits a response that in some way has become connected with S. The connection may be psychological and explicable by the laws of association, e.g. red flag elicits "Russia", "Courage". It may be conventional as in table-chair or unusual eraser-mistake dust. The associative use is marked by non-logical or non-formal associations and connections.

Interpretive

When S requires a translation into a set of concepts, the use is interpretive. Explanations are typical examples of interpretive use. Deliberate exfoliation of a term's meaning is also to be classed with the interpretive use. This use provides a context in which S is to be understood or explicated.

Applicative

S is a problematic situation or a predicament which calls for a solution or a hypothesis as to what would solve the problematic situation, i.e., change it for the better. The applicative use requires familiarity with relevant phenomena, principles, and a technology that utilizes familiarity with fact and principle.

A particular response to S may involve more than one use of knowledge. Thus the applicative usually presupposes some use of the other three, but these do not entail the applicative; the interpretive usually involves some of the replicative and associative, but the reverse is not necessarily the case.

Borrowing the notion of tacit knowing from Polanyi, our hypothesis holds that the associative and interpretive uses of schooling may be regarded as tacit. Certain school learnings, on this view, would function even though not recallable at will.

The selections used in these case studies for the most part call for the interpretive and associative uses, but the responses at times are replications of school learnings, but not always.

The selections were taken from the New York Times. The eight subjects were graduate students with baccalaureate degrees in a variety of fields. If the hypothesis is correct, the responses to the selections should give some clue as to how undergraduate and high school schooling was being used.

SELECTIONS USED IN CASE STUDIES

A Look at Venus on the Full-Shell

Unlikely antagonists last week reached an uneasy truce. Months of argument between the National Organization for Women and the International Astronomical Union ended in a gentlepersons' agreement: Venus will be at least partly a real woman's world after all. The union said last week it would name some planet features for famous women in history, in addition to mythological females.

The announcement coincided with the unveiling by the National Aeronautics and Space Administration of the first contour map of almost the entire surface of the cloud-shrouded planet.

The Economy

The economy is currently struggling with a $30 billion tax increase. If the so-called oil conservation fee goes into effect, this figure will rise to $40 billion or slightly higher. The tax increases already in effect include the "windfall-profits" tax, which we estimate is currently running at an $18 billion rate. In addition, there is the effect of bracket creep (if the typical taxpayer gets an 8 percent increase in wages, Federal income taxes will rise about 16 percent) which we figure at a $12 billion rate. The latter stems directly from the progressive Federal income tax structure. In addition to these tax increases Social Security taxes will rise $18 billion starting in January 1981. Large-scale tax increases are not the appropriate solution for a badly slumping economy.

The slide in economic activity will serve to moderate inflation temporarily. The Consumer Price Index may increase at an 8 percent annual rate, compared with an 11 percent rate in April. This improvement will fall far short of restoring the economy to the relatively tranquil 4.8 percent

inflation rate of 1976. Unfortunately, unemployment will be much higher than four years ago--we expect a peak rate of 9.3 percent in the fourth quarter of this year--and the private sector will be burdened with the highest tax rate since World War II.

Neutrinos

Laboratories in Europe and America are preparing a variety of experimental tests to determine if neutrinos, seemingly weightless particles that fill the universe may actually have some amounts of mass, as reported last week at a scientific meeting in Washington.

If this proves to be the case, it would mean that those ghostlike particles, largely ignored in previous cosmologies, embody most of the matter and energy of the universe.

The effects on many aspects of physics and cosmology would be revolutionary. The discovery, for example, would fit into "grand unification" schemes that integrate all forces (except gravity) into a single theoretical framework.

Dark Elegies

"Dark Elegies," which American Ballet Theater has revived this season after several years, is very likely Antony Tudor's greatest work. This is not an opinion to which all will subscribe as the British-born choreographer's early reputation was more overtly linked to ballets such as "Jardin aux Lilas (1936) and "Pillar of Fire" (1942). It was Mr. Tudor's gift for making specific characters reveal their emotions on the ballet stage in these works that captured the attention. Inner feelings and psychological dance-drama were generally not considered classical ballet's preserve. Mr. Tudor has hailed rightly as an innovator.

"Dark Elegies", unlike these ballets, has no narrative in the strict sense nor does it have characters with names attached. Its own innovative aspects have been subject to debate--it was created by Ballet Rambert in London in 1937--chiefly because its admirers have sought to find its roots elsewhere. British critics have seen it in the direct line of Michel Fokine's "Les Sylphides" or Leonide Massine's "Choreartium." This is a formal link. All these works are plotless and "Dark Elegies" may be said, in this line of reasoning, to be chiefly an evocation of the music--not along Balanchinian lines but as a so-called abstraction of a single emotion or a mood.

Archeology

A striking feature of human evolution in relatively recent times is a kind of super-herd instinct, a clustering of peoples on an enormous scale. It all started innocently and inauspiciously several million years ago, when small, isolated bands of hominids representing a minority breed foraged at large in wildernesses dominated by far more numerous troops and herds of other wild animals. Confined originally to African woodlands and savannas, our ancestors multiplied and kept moving and spread until they occupied almost the entire planet. Then, at first in a few regions and later everywhere, aggregation began with a vengeance. The first towns and cities and urban sprawls appeared about 6,000 years ago, and the human species was off on a new tack, with the end no yet in sight.

Efforts to learn more about this accelerating process as a whole, as a phenomenon in its own right, are more common today than they were a few generations ago, when archeology was more of a museum-oriented profession, an academically sanctioned form of looting that involved the search for

sites chock-full of rare art objects to be displayed in exhibition halls back home. Currently there is a shift in objectives, partly because the cream has been skimmed off--undug tombs and temples being fewer and father between--and partly because of the dawning realization that research confined to glamour sites tells us very little about the emergence of complex societies.

Mushrooms

by Sylvia Plath

Overnight, very
Whitely, discreetly,
Very quietly

Our toes, our noses
Take hold on the loam,
Acquire the air.

Nobody sees us,
Stops us, betrays us;
The small grains make room.

Soft fists insist on
Heaving the needles,
The leafy bedding.

Even the paving.
Our hammers, our rams,
Earless and eyeless,

Perfectly voiceless,
Widen the crannies,
Shoulder through holes. We

Diet on water.
On crumbs of shadow,
Bland-mannered, asking

Little or nothing.
So many of us!
So many of us!

We are shelves, we are
Tables, we are meek,
We are edible,

Nudgers and shovers
In spite of ourselves,
Our kind multiplies:

We shall by morning
Inherit the earth
Our foot's in the door.

RESUME OF CASE STUDIES

Inasmuch as the case studies were not intended to yield statistical data as grounds for probability inference, nothing short of reading each and every one of the eight protocol sets can do justice to the responses. These protocols are available in their original form (transcriptions of the tapes of the self-reports and interview sessions) at the University of Illinois, College of Education.

To make the materials more manageable, I have summarized the original tapes and grouped them by the responses to the six selections. I have tried to indicate my own interpretations with special attention to the putative relations between the subjects' baccalaureate studies and their responses. However, I have tried to keep such interpretation to a minimum and I hope they will give the reader some notion of what the subjects "think with."

I have listed the subjects and their backgrounds and the reader may wish to refer to these descriptions as the responses to the six selections are examined. I am indebted to Professor Alan C. Purves, former president of the National Council for the Teaching of English and currently director of the University of Illinois College of Education Curriculum Laboratory, for a number of these summaries as well as an essay summarizing the reaction of all eight subjects to the poem "Mushrooms" by Sylvia Plath.

LIST OF SUBJECTS

Subject I, Code Name R. Male, baccalaureate in history, now in law school.

Reads News Gazette and Chicago Tribune daily. Subscribes to Newsweek, Sports Illustrated, Volleyball, Reader's Digest, Christianity Today , Moody Monthly (from The Moody Bible Institute, Kindred Spirit, Wheaton Alumni, Illinois Bar Journal , and various newsletters from various student bar associations.

Reads the Living Bibleand occasionally the American Standard to check on accuracy. The Bible, he told the interviewer, was very important to him. Subject's grandfather came from Venezuala and speaks Spanish. His parents do not speak Spanish, but he took in college and it was his "worst" subject, because he mistakenly thought it wouldn't require a lot of study.

Parents were strong Christians, and that although he had at one time rebelled against their strong belief in the Bible, he had come to believe that it was the key to other theological doctrines; he agreed that his baccalaureate degree with a major in history influenced his interpretation of the Bible.

Took a history course in college taught by a Marxist and found the course very stimulating; said he did more thinking in that course than in any other. Forced him to evaluate his own position, beginning with a philosophy of man. Was sympathetic to many of the things studied but the ultimate analysis was diametrically opposed to that of the instructor. R. had to sort out his own views and articulate them, and because the class was small, he would appear to consent to the views of the instructor if he did not speak out against them.

Subject II, Code Name C. Female, baccalaureate degree in business, now a first-year law student. No courses in poetry, art, art history, aesthetics, physical science or biology. Reads for relaxation (before starting law school) Time, U.S. News and World Report and books on the best seller lists that her roommate gets. A book that influenced her was Atlas Shrugged but could not remember the author.

Subject III, Code Name D, B.S. in physics, minor in astronomy. No courses in life sciences, sociology, philosophy, art, art history, or aesthetics.

Reads for recreation mostly in science fiction, military history, a few novels, science for the layman, and Scientific American. Also Analog, Science Fiction Science Fact, COINage, Time or Newsweek. Also newspapers: Sporting News, Pro-Football Weekly, News Gazette (local paper in Champaign-Urbana), Chicago Tribune, and Coin World .

Among the influential courses he has taken were the first course in physics.

Subject IV, Code Name J, female, age 39, bachelor's degree in English literature; now in first year of Master's program in creative writing. Has had courses in poetry, art, philosophy, aesthetics, one "inspiring" course in general science, geology and biology.

For relaxation she reads jokes in The New Yorker , short stories, poetry, and collections of letters.

Subject V, Code Name K, male, age 21, from Thailand, first-year graduate student in MBA program. Two history of art courses at U. of I. Took courses in phusical sciences in high school and became interested in engineering; has had no biology or life sciences. Introductory philosophy course attracted him to the humanities. Reads technical books and an occasional novel for relaxation. Also reads Newsweek, Time, Fortune, Off-Line (computer science publication) , New York Times , and Wall Street Journal,

Subject VI, Code name G. Male, age 24. B.A. in music education; present field music education.

No courses in poetry at college, but had poetry in high school English class. No courses in art appreciation, aesthetics, art history or philosophy. Took two required courses in science: geology and astronomy.

Does not read any newspaper regularly. At home in North Carolina reads the Greensboro Record. Also reads Time or Newsweek once in a while.

Influenced by college violin teacher who also kept flowers, was a pilot, and amateur astronomer. Has been reading autobiographies by Black authors; two books by Langston Hughes; finds books on Black problems "depressing".

Subject VII, Code name S, age 30. Baccalaureate in journalism and religion; at present graduate student in religious studies. Has had no special formal study in poetry or art history or formal aesthetics. Has had courses in art appreciation, and six hours in philosophy and philosophy of religion. Also had four-hour course with lab in physical science as well as in biology, no botany or astronomy, but did take a course in Environmental Catastrophies. For relaxation watches TV or reads in religious fields, e.g., Zen and Catholicism. Never reads newspapers but likes to read classified ads in college newspaper. Read's roommate's Time scanning headlines. Would like to read National Lampoon becuase he is "very fond of humor, but thinks it is now into "base" humor and sex exploitation. Greatly impressed by a book read in first college English course on how we build up hate out of false images. Also influenced by Thomas Merton's Seeds of Contemplation

Subject VIII, Code name, F., undergraduate degree with double major in English Literature and German Literature. Began as Classics major and studied Greek and Latin; switched to art for a year, then to theater, and decided to stick with German. Has had courses in poetry, history types and emphasis on modern poetry.

Had art history at North Carolina State (now doing his graduate work at Miami University in Oxford, Ohio); spent two months at Goethe Institute studying German language and then spent five weeks traveling in Germany. Took course in solar energy and one in astrony with which he had trouble. Loves reading for relaxation... likes science fiction, horror stories, and horror stories based on horror films. Also likes Hemenway and several other American writers. While in Navy read two books a week, including one mushrooms and some on religion; tried to discover relations among various forms of religion. Reads local newspaper including international news items in Cincinnati Post. Also periodically reads German newspapers that come into the office. No longer reads weekly magazines, bud did once.

Books that changed his thinking: The Third Force by Frank Golden which deals with self -actualization; read it while doing stint on nuclear submarine and feeling depressed... can remember chapter titles... "very inspiring". Cites Seth Speaks on ESP. He is Catholic but does not like its explanation...led to joinng Navy and interest in Eastern religions...impressed with doctrine of reincarnation. Does not take Catholicism literally and now goes to Presbyterian church. Cites Edgar Gayce as one of the prophets of reincarnation and tends to believe him.

SELF-REPORTS AND INTERVIEW SUMMARIES

Selection 1--"A Look at Venus on the Full-Shell"

Unlikely antagonists last week reached an uneasy truce. Months of argument between the National Organization for Women and the International Astronomical Union ended in a gentlepersons' agreement: Venus will be at least partly a real woman's world after all. The union said last week it would name some planet features for famous women in history, in addition to mythological females.

The announcement coincided with the unveiling by the National Aeronautics and Space Administration of the first contour map of almost the entire surface of the cloud-shrouded planet.

Subject I --Self-Report

At first the article didn't make any sense. I had no idea what "full shell" meant and it wasn't until I had read the whole article that I had a clear idea of what whas being discussed. The whole idea, namely, that NOW was arguing about how the features of the planet Venus should be named, seems unimportant. The idea of naming these features after famous women rather than mythological females seems trivial; naming them after females who had made controbituions to astronomy would make more sense. Amused by the "fuss" over the sexist syntax when there are "real issues" that could be fought out. Speculates that modern technology has made it possible to learn more about the surface of Venus and would have liked to learn more how they were able to make a contour map of Venus through the cloud shroud.

Subject I--Interview

Questions about the meaning of "the full shell" elicited no indication of understanding the intended allusion to Botticelli's painting, The Birth of Venus, where Venus is shown as emerging from what resembles a half shell. The remarks on sexist syntax apparently were not the result of extensive reading of NOW literature. As to the remarks on astronomy, he reported that although he had not studied astronomy, one

book by C.S. Lewis had dealt with Venus had come to mind but he remarked that "I don't remember the book very well."

Notes

Despite what might be called a humanities baccalaureate with a major in history and one course in art appreciation, the reference to the "full shell" elicited no association.

The scientific attitude toward the selection is stronger than the aesthetic or literary interest, even though he had no formal work in astronomy. However, courses in geology, biology, and chemistry might account for this approach...In general it seems hard to attribute his casual attitude toward the NOW fight for feminism to anything in his formal schooling, but thinking of it as "trivial" might be linked to his interest in religion.

Subject II--Self- Report

Article or selection strkes her as "idiotic" and "trivial". Finds "gentleperson's agreement" irksome and feels the same way about other instances of de-sexist syntax. Seems unable to understand why the issue is discussed and what it is really about. She remarks: " I don't know a single planet feature, anyway."

Subject II—Interview

Has not read much NOW literature and says she knows nothing about the organization. Confirms that she has had no science courses, not even in high school, Apparently, in skipping a grade she missed out on the general science course. She reads a little about science but has no taste for biological topics but "things like stars interest me". Noted that "The announcment coincided with the unveiling by the National Aeronautics and Space Administration " didn't seem to go with the rest of the passage. She attributes her sensitivity to consistency in style to her experience in writing for a religious publication. Session closes with interviewer asking about the title an explaining the academic joke when it was clear the Subject had no notion of what it meant.

Subject III--Self - Report

Notes that the whole article strikes him as silly, especially the attempts to make the language non-sexist. "I'd like to know the methods they used to make that map of Venus, probably radar imaging..."

Subject III--Interview

Reiterates that the objection of feminists to uses of terms indicating gender is silly, and that he regards "man" as neuter in gender referring to the species as a whole. He is less interested in the naming part of the selection than in the second paragraph dealing with the mapping of Venus, because it is "completely cloud shrouded all the time and its impossible to see the surface...but probably had a radar map of some sort." Learned about cloud cover in seventh grade or even earlier; had followed the space program very closely when growing up... Took general science in seventh grade and it was a course in general astronomy and "that is probably where I learned it." "Most of my astronomy courses in college didn't really deal with planets and their geogrpahy or geology--planetary surfaces. Most astronomy deals more with the stars and how they function." Did not have a college course dealing with solar systems and planets. Thinks the NOW demand that some features of the planet be named for famous females reasonable because women have made contributions to science that have not been recognized, and gives example of a woman graduate student in England. No comment on the title of the selection.

Subject IV, Code name J.

Self report and interview combined by Allan Purves

Subject sees the passage in terms of her husband, an astronomer, and metaphorically relates the planet to the goddess. She sees the passage as related to a course on Winn in literature even though there is no direct connection. She also sees the planet in terms of her view of her view of colonizing, even though there is no direct connection. Woman herself seeing herself in a new way. "I see a picture of Venus. I can't remember who painted it...not standing on a full shell; maybe like a half shell, like a medieval painting. So the mythological females and famous women remind me of some things I learned in a course I took --Women in Literature-- by Karen Keener at Parkland (community college) in which I saw that women's language has for so long been enshrouded in a male world, clouded over by male symbols and we do have a myhtology of our own and we need to re-find it, to re-find our language."

Subject V, Code name K

Self-report

Comments on the uselessness and triviality of the NOW effort to have features of the planet Venus named after famous women. The move is ontrary to change of names of hurricanes to masculine. Naming is an "arbitrary thing" so that Russians might not agree with our names. "Why not name mountains of Venus after some foreign culture like Africa, Asia, etc. ?" Notes that while arguing over Venus we are ignoring problems of the earth. "Space program is like a side show distracting people from what's really going on in our planet...people dying, misuse of land, at home problems." Interested in the proportion of names that will be given in honor of females. "Unlikely antagonists last week reached an uneasy truce" sounds like a war, a Vietname war... Truce...Big Deal."

Subject V-Interview

Does not get the intended allusion of "full shell" interpreting it to mean the shell surrounding the planet and "full" referring to a complete view of the planet. Had the image of women meeting with astronomers in search of something worthy to do. Sees them arguing passionately about a trivial matter because "names don't change the course of history or anything. The astronomers are just going alone with the show to satisfy a special interest group." On the arbitrary nature of names he explains that in engineering naming is a way of standardizing language usage rather than approving it. Recollects coming to the ideal when studying the way chemists named the carbon molecule chains (in grade sachool). As to the remark about the Russians not agreeing to our names, notes " " that all these names named some famous astronomers and scientists of the Western world... and this would alienate non-Western people "who want their own names". He himself has been in this country three years and has noticed many cultural differences. Asked about his reference to the mythological meaning of Venus, he says he is not very familiar with it, but it calls up a "statue with the arms cut off." Asked to elaborate on the remark that the space program was a distraction from important problems on this planet, he recalled that going to the moon was a decision made for prestige, publicity to make American look good after the Russian success with Sputnik. Had read somewhere: People are dying here, why go up there ? In general not critical of the article but of the ladies doing their thing.

Subject VI, Code name G—Self-Report

Does not seem to understand the point of the article at first, but gets it straightened out as NOW wanting some of the features of the planet Venus named after famous women rather than some women in Greek mythology...but thinks it to be "pretty trivial". There follows a a rambling and more less disconnected set of remarks about the feminist movement but senses that this is probably part of the drive for equality in which the feminist movement is engaged, but he relates it to the writers of

"the Harlem experience and his own experience in Greensboro, N.C. "I didnIt know some of things that had been going on until after the civil rights movement."

Subject VI--Interview

"Venus on the Full Shell" elicits the image of "some kind of lobster" and He says he cannot make any connection of the title with the article itself. Although he had a course in astronomy he had not learned much about individual planets; does not remember how much time was spent in the course on Venus. Does not read NOW literature but is sympathetic withe goals of the movement but not of all the specific projects. Regards this project as trivial because he feels there are so many serious problems regarding the inequality of women in and in other roles that still need attention... thinks this project may take their attention away from the main problems. Sees no immediate use of the selection or the article from which it was taken in his school work.

Subject VII, Code name S. Self-Report

This selection is about a contest or battle because they speak of "Unlikely antagonists" and "months of argument " Senses that the argument is being instigated by NOW but that they and the International Astronomical Uunion are both "pretty illogical groups." Associates the NOW demand with the naming of hurricanes after women and the subsequent change in policy. Thinks NOW made an issue of the Venus matter at this time because the IAU publication would be receiving attention.

Subject VII--Interview

Title does not elicit any allusion to the painting ... " not much into painting." Most of the interview was a discussion on the feminist movement and his strong and ambivalent feelings about it. Attributes these attitudes to upbringing and possibly his studies in religion.

Subject VIII, Code name F.

Self-Report

At first puzzled by the point of the selection, but infers that it has to do with naming features of Venus after women. "Can't make out what they hope to gain by this," and notes that ERA won't gain anything either...just a political step by NOW. Is reminded of his thesis research on Hauptmann who wrote in the period between 1890 and 1910 when the women's movement was "very big". Thinks Hauptman's treatment more naturalistic and realistic than what NOW is trying to do. Recalls mythological connotations of Venus and thinks that inasmuch as she was the goddess of childbirth, that NOW would want features of all planets to get rid of sexist names and name them after both men and women... The headline on the selection, he thinks, refers to Boccaacio's Venus on the Half Shell, although it is difficult to tell from tape whether he meant Botticelli or Boccaccio; notes that NOW might be making fun of the "seductive" appearance of Venus. Comments on non-sexist syntax (gentleperson, etc.) and he is reminded of a science fiction work Venus on the Half Shell by Kurt Vonnegut, a satirical look at futuristic society, especially at women. Would like to find out who wrote the article and relationship of author to NOW and whether male or female.

Subject VIII--Interview

Studied mythology in Old English literature course and in high school Latin course; remembers project on mythology in junior high school and read a good deal about it, especially material from encyclopedia. .. Learned about NOW when vice president of student government one year at North Carolina and talked to two girls who organized the movement there... Interested in it it, especially because in western part of North Carolina there were racial problems in mid-70s...refers to "token blacks" in every office; thinks if ERA is passed, tokenism and selective hiring would take place. Allusion to title came from course in art history...remebers the painting

but he thought the painting he had in mind was a mock representation of the original in the book by Vonnegut (under the name of Kilgour Trout) and instead of Venus being at the seashore, she is out in space...Asked where he learned to read critically, he thought it was in the writing he had to do in various courses...Had found himself inserting irrelevant comments and asked instructor for book to improve writing style. Instructor suggested Strunk and White...Memorized the 20-30 common errors listed in that book and checked his own writing for them...Recollects an instructor whose views on Oedipus Rex he challenged in a paper but who gave him an A...Stresses difference between statements of fact and opinion.

Summary of Responses to "A Lock at Venus on the Full-Shell"

This selection asks the reader to respond to (1) a report on the unveiling of the first contour map of a cloud-shrouded planet (2) mention of the National Organization of Women's argument with the International Astronomical Union and (3) the allusion of the headline to a famous painting by Botticelli depicting the birth of Venus. They call, respectively, on the interpretive and associative resources in astronomy or at least news about the space exploration and the attempts to photograph the features of planets, the attempt of the women's movement against sexism in general and against sexist syntax in particular, and finally familiarity with the painting and its title.

The scientific aspect is of some interest to subject I although he had had no formal work in astronomy. However, he had courses in geology, biology, and chemistry. He takes a casual and somewhat negative view of the NOW issue and has no inkling of full shell allusion. Indeed only one subject evinced any technical interest in the mapping of Venus and only two could make the association with the painting. Subject III, who had a minor in astronomy and B.S. in physics. The NOW factor struck all but one female as either trivial compared to more important problems in the world; in general the familiarity with the NOW movement came from general sources rather than study of the relevant literature.

Subjects with strong interests and training in the literary fields give longer and more introspective reports; a strong allusionary base and more active in association. Mythology had been encountered more frequently in their studies. In some the article elicited references to social problems that were "more important" than the naming of parts of a planet and there was at least one reference to space exploration being related to international

politics.

Selection 2--The Economy

The economy is currently struggling with a $30 billion tax increase. If the so-called oil conservation fee goes into effect, this figure will rise to $40 billion or slightly higher. The tax increases already in effect include the "windfall-profits" tax, which we estimate is currently running at an $18 billion rate. In addition, there is the effect of bracket creep (if the typical taxpayer gets an 8 percent increase in wages, Federal income taxes will rise about 16 percent) which we figure at a $12 billion rate. The latter stems directly from the progressive Federal income tax structure. In addition to these tax increases, Social Security taxes will rise $18 billion starting in January 1981. Large-scale tax increases are not the appropriate solution for a badly slumping economy.

The slide in economic activity will serve to moderate inflation temporarily. The Consumer Price Index may increase at an 8 percent annual rate, compared with an 11 percent rate in April. This improvement will fall far short of restoring the economy to the relatively tranquil 4.8 percent inflation rate of 1976. Unfortunately, unemployment will be much higher than four years ago--we expect a peak rate of 9.3 percent in the fourth quarter of this year--and the private sector will be burdened with the highest tax rate since World War II.

Subject I—Code Name R, Self-Report

After talking about the article in an effort to understand the issues involved, he notes that "My impression of this is that it is traditional newspaper analysis." Has had no courses in economics and became interested in it when he began "paying my own way for things." Realizes the difficulty of managing a massive economy and that " very few people can understand it and even the best economists ...seem to be making guesses as to what the procedure is to have high employment and low inflation. "

Subject I—Interview

Sources of his understanding of economics are newspapers and a course in estate planning taken at a community college. Also notes that "one gets a good deal of economics in law, which is his present field. Asked about his critical comments on the views expressed in the selection, he attributes it to (1) a general reluctance to accept other people's opinions and (2) a critical attitude fostered in law school studies. This seems to have generalized, he thinks, into a critical attitude toward everything he reads. Reaffirms doubt about the validity and value of economic theory, although he does read about it in general and financial newspapers.

Subject II, Code name C, Self-Report

Does not seem to understand such terms as "consumer's index," "Widfall profits tax", "oil conservation fee", and "inflation rate." Social security makes her think of retirement. Reference to the 1976 inflation rate of 4.8 percent being "tranquil" reminds her of daffodils (probably jonquils). She is not quite sure for whom the article was written.

Subject II, Interview

Interviewer tries to clarify responses to "consumer index" and subject said she did learn about it in her business courses, but in terms of what an average family would spind.

As to statement that "large -scale tax increases are not the appropriate solution for a badly slumping economy", subject said she thought this was true. There ensued an interchange on the role of money in the economy and the effect of taxes. Subject cited several theories about the role of money and taxes, but has no opinion about their usefulness or validity. Said she did not find the article useful because "There are too many things thrown in there that aren't explained...so many figures and no explanation...I don't articles like this ; I usually read them though. She thought she felt pretty much the same way about government pjblications.

Subject III, Code name D, Self-report

It is clear that the subject understands this article, is interested in it, and has his own views on it(see Interview report). Closes with the remark "The article reminds me somewhat of Bill Simon's book A Time for Truth. He seems to hold what he himself calls a rather conservative view of economic analysis and policy.

Subject III—Interview

Reads about the economy and tries to watch at least one national news program daily. The article hit a "sore spot" because "I'm a registered Republican and fairly conservative in my views." Blames the low state of the economy on government spending, naming the Johnso administration's effort to finance the Vietnam war by running up a big deficit. Agrees with Rep blican campaign rgument (1980) that government does too much, and many ineffective programs once set up are not shut down. Notes dependence of the Democratic Congress on vot[illegible] of minorities and argues that this is why poverty programs and the like are continued. Had a course in economics in high school, but seems to have gotten most of his ideas from the Bill Simon book mentioned in the self-report. On the windfall profits tax he reported that he went to the library to check on the Congressional Record to see how some of the debates "held up some of my points and also to check how my Congressman was voting on it." Repeats arguments against the tax, showing familiarity with the "free market"

point of view on many of the details: destroys incentive to find new oil and fills government coffers with more money. Shows intimate knowledge of details on the attitudes and arguments of producers of oil and natural gas in the southern states, the investment policies of the oil companies. Also very familiar with the detailed arguments on funding of Social Security and the "effors of the government agencies to keep the true state of affairs away from the citizenry." Repeats that his sources are newspapers and commentators including Paul Harvey, but he thinks he reads critically and understands the rationale of the argument; is willing to use their theories to explain inflaction, creeping tax brackets, and other economic problems.

Subject IV, Code name J, Self-report (Comments by Alan C. Purves)
Subject refuses to understand the selection although she realizes she should try. "I won't be able to talk about this at all, about the economy, facts and figures, so I would know right away not to read this...I've got to learn about income tax, money because here I am a woman struggling to be independent and this is may own main area of illiteracy and I'll never make it unless...As I read this I keep thinking how I had more to say about the other one and my mind keeps floating away from these facts and figures...should know about this but don't...really can't... Have to write, have to set aside the world to have space, undisturbed, tranquil to create have to depart from wrold... This is one of those things my mind refuses to imbibe...needs a personal level."

Subject IV—Interview Report combined with Self-report above.

Subject V, Code name K, Self-Report

Author biased against tax increases...reluctant to adopt economic theory expressed in the article, especially the role of taxes and government spending for social services...Jokes about the American economy being called the eighth wonder of the world and " the 9th is Americans' ignorance of their economy." Also disagrees with the consumer philosophy philosophy of American life—two cars, two houses—need slides in the economy to curb excesses of consumers.

Subject V—Interview

"Struggling" and "burdened" in the article construed as evidence that author is biased...does not perceive author as a professional economist, but a lay economist "B.S. ing his way through." Traces his critical tendency to courses he has taken in literature as they involved evaluating the motives of the author and to "quite a few economic courses , and I am in business education now so am suspicious of a guy who thinks he knows everything and is certain of everything." Takes "expertness" in the article to be a pretense; attributes some of it to work in computer programming where everything is spelled out. Also takes issue with Milton Friedman, despite his impressive professional credentials saying that " ... you can tell a bunch of leepholds and value judgements that goes on in his argument." Cites California Proposition 13 as example of of middle-class taxpayers not wanting to pay taxes and forgetting the benefits taxes bring to the poor, so "I was angry for the underdog." Asked to explain "comumer index" uses a market basket including a typical number of typical items as an analogue, noting some anomalies and exceptions. Returns to rejections of generalizations by economists. Also returns to disapproval of the consumer society. Identifies arguments against more government with Republicans and Ronald Reagan. Thinks efficiency and not size of government ought to be the issue, and would apply this criterion to capitalism and communism.

Using computer analogue, discusses differences in awareness between programmer and the manager...Sees government as managing the problems of society so that the people do not have to make decisions at this level; defends the government taxing the people so that it can bnefit society as a whole, yet does not want to accept generalization that the more taxes the better...was really thinking of gasoline taxes and their effect on consumption and cites European example of $3 a gallon charged there.

My Comment:

K. is extremely articulate, but language is loose and somewhat disorganized, perhaps because English is not his native tongue...Clearly his responses reflect lots of reading in the field of economics and formal study of economics. The antipathy to broad generalizations rests not only on counterexamples, but also on the difference between the kind of precision he has encountered in engineering and computer science and that claimed by economic theory. He thus suspects that the formalized language of economists may conceal ideological preferences.

Subject VI, Code name G, Self-Report

Point about taxes makes G. think of their effect on poor people and young people starting out. Ponders fairness of social security system...would like to see business sector of the economy take greater share of tax burden and that extremely wealthy should pay more taxes and not convert so much of their income into operations that allow them to pay lower taxes...Yet perhaps lower and middle-class families do not understand what "type of economics the business people have to go through. Perhaps there are good reasons other than maximizing profits."

"All of a sudden I find it a difficult subject to really come up with solid reasonable solutions...Even though I have a tendency to be more on the side of the workingman, it is difficult to come up with adequate reasons ...hard for me to justify those few, those people in control. " Might be interested in reading whole article if it gave more specific solutions. The selection suggests things may be getting better but may be worse before then...folks will have to struggle to maintain a moderate or even a low standard of living.

Subject VI—Interview

Has taken micro and macro economics courses in college and remembers some discussions about stock in a social science course in junior high school. Takes no sustained interest in economic issues aside from reports on news programs . Thinks "All Things Considered" program on radio goes into issues more deeply than television programs...Guesses that his social views come from Black literature and some Black sociological studies and from Ebony, which at one time he read regularly, but not lately. Also mentions s ows that protray unethical behavior among the wealthy that gets around the law...has noticed rash of lawsuits; also has noticed large corporations' disregard of social effects of their activities and lobby against consumer groups... Has only vague idea of the meaning of Consumer Price Index.

Subject VII, Code name S, Self-Report

Does not understand the terms; finds them "too technical". Finds selection uninteresting and would not care to read "at length such as this. "

Subject VII, Interview

Re-affirms lack of understanding such terms as "consumer price index", "progressive federal income tax structure", "conservation fee" and

"bracket creep", although he has some notion about windfall profit tax because he heard it on television. Has difficulty with talks about percentages... "...the last math class I had had to be in the 10th grade business class... and I thought that was just fine, being in journalism, all I need to know is how to number the pages." ..."I wish a knew more math since I have interests in physics and astronomy, but I don't worry about it...that's sort of primitive but..."

Subject VIII, Code name F, Self-Report

Doesn't enjoy reading this type of material. Notes that government can't control the economy...seems to understand "windfall profits tax", "inflation", "deficit", "bracket creep". Economists and government personnel "don't know what they're talking about." Refers to his own financial situation saying, "We have been able to get by on a very small amount of money by conserving here and there, whereas people who make two, three or four times what we do cannot get by." Concludes that general public might by conservation eliminate a " a lot of these extra taxes." Thinks system of taxation should be revised but doesn't trust Congress to do it and suspects upper classes aren't taxed at same rate as lower income families. Distrusts manipulation of statistics to explain economic problems.

Subject VIII-Interview

Asked to define consumer price index and other technical terms does so in a series of long comments that show he has a general (non-technical) understanding of them. Asked how arrived at the notion that government doesn't know what it's doing he replies that he gets impressions from reading news stories that give conflicting report, changes of policy, etc... notes that issues set off long arguments even in student government. Notes that income tax booklet of instructions reminds him of a "demonic game" by clever bookkeeper types who deal with figures not people...notes reports of corruption in government ... allies in Europe scared by our "weak" government..."I'd like to see a strong

president. Has had no course in economomics but reads business sections of newspaper; likes to keep up on exchange rates. Seems sensitive to economic problems and reads a good deal about world economic issues.

Selection 3--Neutrinos

Laboratories in Europe and America are preparing a variety of experimental tests to determine if neutrinos, seemingly weightless particles that fill the universe may actually have some amounts of mass, as reported last week at a scientific meeting in Washington.

If this proves to be the case, it would mean that those ghostlike particles, largely ignored in previous cosmologies, embody most of the matter and energy of the universe.

The effects on many aspects of physics and cosmology would be revolutionary. The discovery, for example, would fit into "grand unification" schemes that integrate all forces (except gravity) into a single theoretical framework.

Subject I, Code Name R, Self-Report

"Gee, this is interesting, but I'll never be able to understand it. I wasn't particularly outstanding or interested in science during high school. I avoided it during college. But it has taken a new interest...particularly when I don't have to be studying it. What are neutrinos? I know I've read about them: protons, neutrons, electrons and type of terminology came into my head...read something in science section of Newsweek related to this, but don't remember much of it." ....Impressed by the general developments in physics...might be revolutionary. "A grand unification scheme" aroused associations with Einstein and his theory of a unified universe and the challenging effect such a theory would have on the ideas of many people... but looking at article again, notes that it is not proved and wonders if such notions can be proved. This leads to associations with "evidence" course he is now taking in law school. In this course the distinction is drawn between scientific and legal evidence, and the dependence of the latter on the former in such areas as blood tests and lie detector tests.

Subject I—Interview

In response to question as to source of familiarity with neutrinos, subject mentions charts with "little things spinning around each other" and trying to learn about positive and negative charges, but can't remember any particular course. Although he can't recall school work that influenced remarks on Einstein, thinks that general understanding of scientific approach was learned during the school years. Makes the point that validation of some of the theories in physics do not depend on visual evidence, but on whether the theory "works". Remembers that neutrinos, atoms, etc. are "very small". In response to question on the parallel between legal and scientific evidence, notes that the scientific community functions like a court of law as regards the admissability of evidence.

Subject II-Code Name C, Self-report

"Would look over this article even though I have no background in science—don't understand what neutrinos are, even how you pronounce it...Don't know what grand unification is—vaguely familiar, maybe from high school...Wonder who's paying for all this; what makes them think of it; pictures of men in white with glasses... No really good discoveries for years; fascinated by really original ideas. Seemingly weightless particles like volcanic ash or dust in the air, don't know what they are...that fill the universe. Where does the universe start ? Astounding... How can it be ? Wish I knew what grand unification means; guess effect on physics would be revolutionary. . . Why isn't gravity in a single theoretical framework; wish I knew that."

Subject II—Interview

Follow-up revealed little not in self-report. General image aroused was "dust". Unification idea did not arouse mention of Einstein or relativity, and the illustrations of ideas that she thought were "good" discoveries were Edison's

work on the light bulb or the invention of the airplane. Impressed by "math people" who "sat there and figured out about triangles and areas inside them and all that kind of stuff".

Subject III, Code name D. Self-report

(Reads silently for the most part) "Laboratories in Europe and America are preparing a variety of experimental tests to determine.....Boy, there's an experiment for you! All scientific theories and particle physics and everything...it's all built around the theory that the neutrino is a massless particle having a spin and a charge. As a matter of fact, it's just there to balance an equation, primarily, and its detection has been almost impossible. Even the experiments that have been running for ten years in South Dakota have been... were not proven.. have not detrected significant numbers of neutrinos. At least, not as many as would be predicted by theory.... It would completely alter all theories of particle physics, nuclear fission... everything... I haven't read that much about the unification theories. I know there are some that include all the forces including gravity... can't see right now how a neutrino would fit into that...if it has mass. Definitely would like to read a lot more about this; don't know when this article was published, but this is definitely exciting... very interesting. If it's true, it would throw out most of the stuff I spent four years as an undergraduate learning !"

Subject III, Interview

Interview reinforced impressions made by self-report. The subject understands difference between an hypothesis, experiments designed to test it, and what would constitute a valid test. The South Dakota experiments familiar to him as are the technical terms: spin, charge, mass and their role in the equation. Commenting on the "revolutionary effects of the neutrino" having a mass, says, "Well, every textbook I've ever seen on elementary particles of physics from your beginning physics course, which is where I learned it,

talks about it. Normally, it is about 1/3 of a semester of a physics sequence and you are always taught that a neutrino has no mass. It just has spin, it's there just balancing the equation. " There follows an account of nuclear fission and other nuclear reactions, and "all the theories on these fusion phenomena have been based on the neutrino not having mass." Discusses the effects on the equations... the unitary character of an amount of mass... the effect on theories of unification of gravity, nuclear forces, magnetism, etc. Remarks that the theory of unification is beyond him, although he knows that Einstein had worked on it. When asked whether he thought the article useful, he replied, "Oh, I still maintain a fairly active interest in the sciences. I still read the science pages of the newspaper and occasionally read books on it. .. It still excites me to read about these things. "

Subject IV, Code name J, Self-report and Interview by Alan C. Purves

Subject tends to reject the whole selection, including the style. "What are neutrinos ? What does it mean ? There is something that is ghostlike that embodies the matter of the universe, but I'm not sure it's neutrinos. Sounds like Wheatena or something you find in a breakfast cereal box. Even somebody writing this and thinking that these neutrinos embody matter and energy of the universe. Who is man to say that ? How...I don't believe this. I don't really think it's so. I don't really think that anyone discovered that these things embody most of the energy of the universe. Somehow I think these things are just written for this test ...that someone... They're like spoofs or something and this last statement is so phony or blown up."

Subject V, Code name K, Self-report and Interview combined.

Subject responds with ambivalence. Because of his knowledge of physics understands the language of particle physics, the phenomena of fission, fusion, relations of energy to mass, the $E=mc^2$ and the attempts to arrive at a grand unification theory. Demonstrates this knowledge to interviewer by a long and fairly detailed explanation of the relation of gravity to the transformation of hdrogen into helium. He realizes the import of the hypothesis that neutrinos might have mass for both science and cosmological speculation. Yet there is a reiterated lack of interest in the article and what it represents. "Article doesn't interest me...facts, facts. HOw's this going to translate to people in the ghetto, people dying of starvation...but, best shot at a solution... who knows? Ordinary people cannot understand scientists... don't understand forces that change their lives... use their tax money... competition among scientists... DNA by Watson...race to publish, be famouse... society doesn't need all these scientists."

Later, when asked by the interviewer to explain this lack of interest--almost antipathy--he replied that it was a "temporary feeling" but later explained it by familiarity with concepts involved... nothing particularly interesting and exciting about it. Says, however, that the author is telling it admirably unlike the writer of selections on the economy. Drawn to the importance of science (being an engineer and all that) but still can't see how discovering the fact all matter is ultimately made up of neutrinos is going to affect you or me or people in the ghetto. "So right now, I'm arguing with myself..." Recalls book that argued that society is slowly being divided into those who understand technology and those who don't....As to cmpetition among scientists for fame, says he heard it from one of his professors who referred to Watson's book.

Subject VI, Code name G, Self-Report

Remembers reading about neutrinos in college astronomy course, but cannot recall much about them and whether they are composed of or compose atoms... finds difficult to take suggestion that neutrinos have no mass ... whatever exists, a particle no matter how small, must have some mass, even if we cannot detect it. If neutrinos are basis of all existence, then all things are related in having neutrinos, even strange and presumably nonbodily states such as are described in Teddy, one of J.D. Sallinger's stories...Recollects reflections on relation of Christianity or the role of God in religion with the scientific explanations of phenomena. Thinks maybe God "...chose to do His work in specific sequences... which a few scientists have been able to figure out, but that there had to be a catalyst to start it and that catalyst he would choose to call God." Has no idea of what "grand unification scheme" means ... thinks he would like to read more of the article to find out a few more things about neutrinos and the grand unification schemes and why gravity would be excluded from the theory.

Subject VI, Interview

Thinks neutrinos were mentioned in his astronomy course, or perhaps in the 9th grade general science course. as to Teddy, he read it because he had read Catcher in the Rye when it was part of an English course in high school. Traces some of his notions on science and religion to Superman comic books, but was made more aware of the problem of God and science during his freshman year in college when one of the girls he had met was "trying to be an atheist," and later turned to Christianity; was disturbed by violent discussion on this subject and was led by this to try to find a way of combining God and science..."God may be a real advanced scientist."

It has just occurred to him that just as a great composer can create music that "comes out exactly as he wants it", so can God. This leads to think of a book Life is Tremendous by Charles Jones in which the young have a few keys to life, but the old timer has many keys, and the scientist is more like the young person who has to accumulate keys throughout life, and God is like the old timer with all the keys. Would like to read the whole article, but likes to read about science when it is embodied in science fiction.

Subject VII, Code name S, Self-Report

Finds this selection interesting because it relates to what he calls "metaphysical and philosophical views" about the universe, and because it provides scientific substantiation for them. Has interest in such things as physics and astronomy and what a single theoretical framework would be.

Subject VII--Interview

Reaffirms belief in one grand scheme for the universe and ultimate reality...The idea of unity sets off associations with mysticism, Eastern religions, Tao, Zen, dualism and monism, universal interaction, spiritual unity vs. science or unity of existents. Asked about his reference to "scientific substantiation of his religious views" he amplified by referring to his belief in Aqtinas' proofs for the existence of God as the First Mover, First Cause, design in nature and that "science can explain how this process operates." Likes to read scientific articles but find them hard to follow because of "my weakness in mathematics, but if not too technical I enjoy reading them ". Will recall term "neutrinos" in connection with "grand unification scheme" and perhaps try to find books by this author and read more about it.

Subject VIII, Code name F, Self-report

Remarks indicate more familiarity with the technical terms than in the selection on the economy. Attributes some of this to experience on a nuclear submarine while serving in the Navy. Some of it reflects formal schooling, but the associations veer from technical points to social consequences involved in nuclear war and weapons. Mass, particles, grand unification schemes, Einsteinian equations are mentioned as if there were a general awareness of the theories and experiments involved but no technical and systematic knowledge of them.

Subject VIII—Interview

Formal schooling in this area came from three months in a school in California and three months at a protype plant in Idaho. First three months were pure theory, dealing with what went on in a reactor. Notes that there is no direct observation of neutrinos and other sub-atomic particles, but is vague about the sort of evidence used to substantiate their existence and effects...suspects there is a lot of guessing and cites uses of "may" as indicative of this uncertainty. This sensitivity to the difference between the indicative and subjecnctive moods he attributes to his studies of both English and German language.

Selection 4--Dark Elegies

"Dark Elegies" which American Ballet Theater has revived this season after several years, is very likely Antony Tudor's greatest work. This is not an opinion to which all will subscribe as the British-born choreographer's early reputation was more overtly linked to ballets such as "Jardin aux Lilas" (1936) and "Pillar of Fire" (1942). It was Mr. Tudor's gift for making specific characters reveal their emotions on the ballet stage in these works that captured the attention. Inner feelings and psychological dance-drama were generally not considered classical ballet's preserve. Mr. Tudor has hailed rightly as an innovator.

"Dark Elegies", unlike these ballets, has no narrative in the strict sense nor does it have characters with names attached. Its own innovative aspects have been subject to debate--it was created by Ballet Rambert in London in 1937--chiefly because its admirers have sought to find its roots elsewhere. British critics have seen it in the direct line of Michel Fokine's "Les Sylphides" or Leonide Massine's "Choreartium." This is a formal link. All these works are plotless and "Dark Elegies" may be said, in this line of reasoning, to be chiefly an evocation of the music--not along Balanchinian lines but as a so-called abstraction of a single emotion or a mood.

Subject I, Code name R, Self-Report

"It's not the kind of thing I would normally take time to read." It might be noticed, however, because it would be interesting to his wife. So uninterested was he in the selection that he began noting grammatical errors in the selection. Among his impressions: He prefers ballet with a story line; "this one seems to be plotless." Ballet "persons" have to be tremendous a thletes (his wife took some lessons). Also ideas of jumping come to mind and its relation to jumping in volleyball, which he has played himself; some notion that dancing might help develop skills in volleyball. Notes that "I quickly turn a discussion of high art form into a subject of my interest—athletics."

Subject I—Interview

Questioning by the interviewer failed to elicit any further comments or interpretation of those in the Self-report. Does not think he will develop an interest in ballet, but might go to one if his wife wishes him to do so.

Subject II, Code name C, Self-report and interview combined

"struggled through this article; would never read this on my own; doesn't make me think of much except image of people jumping around on stage; never seen a ballet; never seen an opera and vonfident never will." On Mr. Tudor's gift for making specific characters reveal their emotions on the stage, subject is at a loss as to how "you reveal emotions, if you just go through the steps of a dance, especially since "aren't these supposed to be planned out?" To the statement, "All these works are plotless" she says, "I don't know what's going on when I see them on TV...think I saw the Nutcracker once... didn't have much effect, I guess."

Subject III, Code name D, Self-report

Almost entirely negative as far as interest and knowledge are concerned. "If I saw an article like this in a newspaper, I'd probably just skim over it and not even bother to read it."

Subject III- Interview

In response to the interviewer, subject reaffirms lack of interest in the dance. "I've often liked the music that goes with, say a ballet or opera or something like that, but the actual, the dance or opera itself just doesn't impress me that much...None of these things mean anything at all. I know a few opera names, certain symphonies, if you mentioned them to me... but I can't give you a name of one of the ballets I know of." He thought he knew what a ballet was, but it is " just something I've never watched or taken an interest in."

Subject IV, Code name J, Self-report and interview combined by Alan C. Purves

Subjedt reacts positively to the passage and the title, although she does not understand it. Makes a personal reference to her childhood and dancing. Aubject as part of Adelphi Children's Center for Creative Arts for 10 years; twice a week did acting, dancing, drawing, not for performance, but to grow as a person through the creative arts...to grow in empathy, awareness, perception relationships...purpose not perfection of acting ability or dancing but to grow inwardly as a person...recalls getting through school (grades were O.K.) but couldn't wait for the Saturday and Monday sessions at the art center, for Adelphi was the real world, responded to it and within her she felt that place was right... it answered something within...when she danced with St. Denise and Shawn, it was the feeling of forces within herself being responded to and acted upon... not ignoring, growing, blooming, exciting... wants to see ballets so she can recapture those childhood feelings.

This year and a half I learned to disco dance and love it... feels like reborn through going to a bar and discoing... living in the dance, deciding (o)overtly to make something of my writing, to become involved with a community of dancers. That's part of the dance...not retreating into oneself wholly.

Subject V, Code name K, Self-report

Baffled with respect to the topic...did not know the meaning of choreographer and not sure or "ballet". Sense of frustration at being confronted with his ignorance of the subject and of the French words in the selection...Art judgment is relative or arbitrary. "Art is just agreed understanding about what to consider good." Yet he would wish to argue against those (typical engineer) who reject the value of art altogether. "We need to capture a perfect balance between the world of feelings and the world of science. We need the dreamer as much as the thumber." Alludes to Star Trek episode in which Mr. Spock talks of the advantages of having no feelings to which he responds, "My condolences go to him ((Spock) no feelings, no fun."

Subject V, Interview

Has not been exposed to ballet or read books about it... but the article made him want to understand it; feels he is missing something. The comments on the relativity or arbitrariness of art judgment he thinks he got from two art history courses, where changes of taste and appraisal in various periods were pointed out and illustrated... Remembered one such example in which the same painting in different treatments would be judged differently in various periods. Got the dreamer-thumber phrase from one of his computer science books—that in an organization you need both. Cites examples from computer

science and marketing; seems to be making the point that organizations need idea-people and executive people. Recalls professor who blamed failure of technology on people... Closes by repeating that he could not understand the selection at all, but noted that as a result of his art courses he could understand the references to Picasso, Gauguin, Cézanne in a WILL program--how artists influenced Picasso and how the colors change and how much art changed, and "I'm proud of myself."

Comment: Note how art history courses are functioning , largely associatively whereas science and economic courses were function interpretively in the neutrino and economy selections.

Subject VI, Code name G, Self-report

The name of Tudor arouses associations with "choreographer", but the associations are uncertain and attributed to unidentified readings reports of interviews in the press. Not really much interested in ballet except in its relation to mus (subject is in music education), but term "classical ballet" draws his attention because he says he has encountered it so much in his musical studies... Igor Stravinsky supplies link between "classical" and "ballet" for he wrote music for the ballet and rebelled against the classical style. Thinks Tudor by not having a narrative plot in Dark Elegies is also non-classical. Recognizes Les Sylphides in the selection and deduces that Fokine is a choreographer and notes that by ballet people the work is associated with the choreographer, hwereas musicians associate the ballet with the composer of the music... Characterization of Dark Elegies as plotless reminds subject of a ballet called Parade for which Satie composed the music, "because the little dances are not connected." "It's a weird plot, something

I would not break my neck to see". Adds that one is supposed to know about such things "being a scholar of music." "Mr. Tudor's gift for making specific characters reveal their ...emotion" sets off observations that singers can do this because "they have words to work with" and the inflections of the voice express a variety of emotions...thinks dance would find it difficult to express emotions without words and voice, but hinks of mime as a counterexample. Concludes that dance might express emotions but in a "larger space"; doubts his ability to perceive emotional express very accurately from watching the dance, partially because "I would be so far from their faces."

Subject VI—Interview

Subject acquired knowledge of ballet and ballet music in four courses in the history of music required for music and music education majors at the University of North Carolina...Gives a long and detailed account of the various periods and styles of music...Was familiar with the music for the Stravinsky ballets and using the Rites of Springrecounts the hostility with which it was first received and relates this to developments in musical composition via atonal composition, and other modern tendencies; mentions relations of music to societal change and the need to to be able to see both sides... Repeats on request of interviewer his problems with the ability of the dance to express emotion and attributes this in part to facet that he has never seen a ballet except on TV where subtle movements would not be perceptible.

Subject VII, Code name S, Self-Report

Not terribly interested because, " I don't know anything about ballet." The names are unfamiliar to the subject as are the ballets mentioned; not sure of the pronunciation of either. Makes some remarks about dance expressing moods and inner feelings.

Subject VII—Interview

Has seen ballet only on television. Makes no association with "Tudor", "Dark Elegies" but pictures him as "being effeminate, because, I hate to say it, that's another stereotype of ballet not being for men." Can't make much of Tudor being called an innovator because it doesn't tell about the standard of what is normally done in his field. "London in 1937" elicits, "I picture that as being a sort of nice, romantic, happy time, London, like the old movies of 1937...Ellery Queen type of things, maybe." Thinks he would like to attend ballet, but not sure. Defines choreographer as someone who helps other dancers.

Subject VIII, Code name F, Self-Report

The article elicits lots of comment, most of it positive and almost "excited." Touches on the importance of innovation, ballet as a means of communication, period in which the ballet was composed and performed; characteristics of art in various periods; modes of expressing character and emotion in literary and dramatic forms; revivals, reference to German writers and dramatists.

Subject VIII—Interview

Amplifies on topics mentioned in Self-report; although he is not familiar with the ballet, never having seen one on the stage, except the Nutcracker

on television, he is very much interested in it as a mode of artistic expression and most of the references are related explicitly to German literature. He is especially aware of the break with tradition in the early part of the 20th century and cites Brecht. Returning to the theme of communication, he refers to his own difficulties in communication and his efforts to correct them. Cites courses in writing and experience with writing papers; leads to remarks about how professors get published and the requirements for being published.

Selection V--Archeology

A striking feature of human evolution in relatively recent times is a kind of super-herd instinct, a clustering of peoples on an enormous scale. It all started innocently and inauspiciously several million years ago, when small, isolated bands of hominids representing a minority breed foraged at large in wildernesses dominated by far more numerous troops and herds of other wild animals. Confined originally to African woodlands and savannas, our ancestors multiplied and kept moving and spread until they occupied almost the entire planet. Then, at first in a few regions and later everywhere, aggregation began with a vengeance. The first towns and cities and urban sprawls appeared about 6,000 years ago, and the human species was off on a new tack, with the end no yet in sight.

Efforts to learn more about this accelerating process as a whole, as a phenomenon in its own right, are more common today than they were a few generations ago, when archeology was more of a museum-oriented profession, an academically sanctioned form of looting that involved the search for sites chock-full of rare art objects to be displayed in exhibition halls back home. Currently there is a shift in objectives, partly because the cream has been skimmed off--undug tombs and temples being fewer and father between--and partly because of the dawning realization that research confined to glamour sites tells us very little about the emergence of complex societies.

Subject I, Code name R, Self-Report

First impulse was to question article for assumptions it makes that evolution is a proved fact. " I personally believe that man is made in the image of God, and there is a distinct difference between man and other animals because of that." Makes him a little reluctant to read the article. As to origins of man, is doubtful that conclusive evidence about place and mentions Tigres and Euphrates as the birthplace of man--where Garden of Eden was supposed to be located. "In second paragraph the subject becomes archeology and I immediately thought of King Tut exhibit." Has some resentment toward the characterization of archeology as an "academically sanctioned form of looting."..Remembers "crazy article" in Reader's Digest about "...get rich quick " theory of archeology: to find promising place for artifacts ahead of others... King Tut's tomb rather than some Indian mounds in Illinois." Recalls painstaking efforts to "record" everything by archeologists; also satirical conjecture as to what inference might be drawn by an archeollogical dig from remains of an American motel...Among observations : quality of evidence as to inference from archeological remains to former cultures; controversy about archeological rights in Southwest, especially those of Indians and favoring professional archeologists against those "trying to make a fast buck."

Subject I--Interview

Learned about Scopes trial(mentioned in self-report) from history books, usually a small paragraph followed by comment on "growing academic freedom". Reiterates lack of excitement about evolution controversy and that he grounds his preference for Biblical view on difference between man and other animals resting on man's being created "in the image of God."

Has read National Geographicmagazine occasionally and does not take its views about the birthplace of man seriously enough to challenge his own view; now recollects mention of the evolution theory in third or fourth grade in school. As to his objection to the "looting" phrase, subjects grounds it in his acquaintance with some students majoring in archeology, but even more on belief that it is an overgeneralization. Most of his information on the general topic comes from newspapers and general interest magazines; he criticizes article for use of technical terms and lack of coherence in writing style. Traces this sensitivity to style to criticism by teachers and also to course in legal writing.

Subject II, Code name C, Self-Report

Topic makes her think of a friend who is an archeologist; doesn't want to put in the time it took her friend to become one. "Super-herd instinct" People don't like to think of themselves as herds. "When I see herds, I think of cattle." "several million years ago", ..."The idea of that is fantastic." Writer seems to be projecting image of primitive man out there against all the animals; also telling that " we're wild animals."... Didn't know towns began 6,000 years ago; doesn't like the word "looting" in connection with archeological digging...." doesn't seem tlike looting to dig things up." Reference to "glamour sites" evinces comment that digging things up is not glamor.

Subject II--Interview

Confirms remarks in self-report, but adds that she has two friends in archeology--one digging in Arizona; another runs a museum in California, and this gives her some understanding of what is involved, although she didn't know one had " to go through all this" to run a museum. She thought she

understood the article and would read it for "background general information". Repeats that very long periods of time (several thousand years ago) strike her as fantastic.

Subject III, Code name D, Self-Report

Mildly interested; takes issue with reference to human being as troops of animals and such terms as "herd".

Subject III—Interview

Subject reiterates that he does not see urbanization as manifestation of herd instinct...thinks of herd instinct as referring to gathering of animals for protection—water hole image evoked, but thinks urbanization not accurately described by huddling for protection, but rather as gathering for advantages. The water hold is more apt for the city than the huddling of animals around the leader for protection against predators. Thinks he got this meaning of herd instinct from watching Wild Kingdom animals on television...identifies herds with cattle and coyotes... finds it difficult to think of human beings as animals... human behavior far more complex. As to characterization of archeology as looting (academic looting) he says that he had read somewhere that early archeology, primarily in Egypt, was not directed toward scientific knowledge, but to bring back artifacts to England or Washington. Gives the King Tut diggings as examples of having to bring back objects to repay patron of the expedition. Today archeology more scientific and not so dependent on private support. Read about the work in Egypt in a book Excavations at Deirel Bahri. Cits a number of details, but not sure he is remembering correctly, and this together with other reading, he thinks, justifies the "looting" charge in earlier excavations. Cites statue in J. Paul Getty art collection and controversy about its being stolen.

Subject IV, Code name J.Self-report and interview combined (Alan C. Purves) Article confuses at first but it remainds her of author whose name, Loren Eisley she recalls with great difficulty. Likes this author because he integrates his own search for understanding the mystery of the universe with this search in his field Poetric, philosophic, scientific—all integrated. She bases her liking of this author on her concern with the separation between disciplines in the academic world. Traces her desire for integration back to secondary school and a speech she had to write which others thought was "different" from their views. "Well, I know they thought it was naive. And even my feelings about communism at that time, too, I can remember as being different from theirs. And then choosing to go to Antioch was another—Antioch integrated work and theory. I probably identified with that professor at Antioch who talked with us and probed and asked us things and then we would respond and she probably sought for that kind of answer. Different from what a classroom teacher might ask for."

Subject V, Code name K , Self-Report

First reaction to remarks on evolution is to note some counter-examples. If men formed super-herds, "then how come they're fighting each other... herds are not supposed to fight among themselves... but maybe they do for the females. It seems weird that the cradle of civilization all started under almost desert-like conditions like Mesopotamia and Egypt, but now industrialized countries clustered in the temperate zone: Why doesn't the hot cliamte that harbored the origins of civilization naurture them now?"

Reads rest of text and this reminds him of King Thut's tomb discovery and wonders whether archeological remains can tell you about what kind of societyexisted. Also notes that it seems like " they are trying to learn what the past has to tell about the future. Is that why you learn history, to learn more about the future, to be wiser ? I'm very skeptical. "
Comes back to awareness of the lack of attention to the poor and makes a comment to the effect the archeologist who discovered the tomb of a great kind is probably more well known than the one who discovered the typical house of the time or a worker of that time... Why bother with a peon ?

Subject V--No Follow up Interview

Subject VI, Code name G, Self-Report

About the only thing that the subject noted in the article on the first reading was the word "super-herd"~~Instinct~~"... a clustering of people... on an enormous scale. This reminded him of an incident on the Miami University campus in which a a very large group of men came out of a college dormitory and walked as a group to some destination (not clear where this was). Subject was impressed by the sixr of the group and "It was a little frightening." It reminded him of a demonstration or protest march... a march that somehow held potentialities for "raising hell."

Subject VI--Interview

The same image of a large group being vaguely threatening is re-affirmed. When the interviewer asked the maning of "evolution", subject recalled a life science course in high school. Also mentioned "mutation" and described the mechanism commonly called natural selection. Asked about his interest in this article, subject said that it would be interesting, but he would be more concerned about the sociological effects related to large cities where he had no intention of living. His acquaintance with archeologists he attributed to Professor Lang in a Superboy comic book.

Subject VII, Code Name S, Self-Report

Might wish to read the whole text. His comments stress two themes. One is that the author is unfair to the field of archeology; repeatedly rejects statements in the selection as "unfounded" and indicating "an aversion to archeology."

Subject VII--Interview

Asked about his critical analysis of the selection and where he acquired this ability, he mentioned that in his graduate work great emphasis was placed on substantiating assertions with evidence. Doesn't find much substantiation in the selection and "it sounds like this person read Darwin and Freud (had mentioned Civilization and Its Discontents and Future of an Illusion) and then sat down and wrote this article."

"This looks like a paper somebody wrote an hour before it's due." At one time he thought he might go into archeology because " ...being in religion it's hard not to be interested in archeology...then I took my first course in archeology, and it wasn't for me." Surprised selection was taken from New York Times and comments on it from his work in journalism as being for "Joe on the street" and that it sounds kind of "tacky". "Chock-full" reminds him of a candy bar commercial...Asked to amplify references to Freud, he explained that Freud was required reading in the department of religion for Master's candidates and the idea of a primal horde is related to man's being stuck with a neurotic base and that neurotic base is religion. Explains how Freud used the primal horde in sex practices to account for guilt and the origins of religion. Thinks this and reference to the superherd instinct in evolutionary theory aroused feeling that this selection was "too anti-God and anti-religion." Defines evolution as a process of change, but not just from ape to man.

Subject VIII, Code name F, Self-Report

Unterested in archeology and has read about it. Is bothered by reference to human beings as wild animals as "were the other hominids." Doesn't quite understand how dispersion from African woodlands and savannahs occurred and comments on the lack of continuity and transition in the writing of the article. Selection reminds him of visiting museums in Germany and archeological remains there, and this reminds him of cave paintings in France and how archeological finds improve knowledge about the history of man. Does not understand significance of statement that there has been a " shift in the objectives of archeological research because the cream has been skimmed off."

Subject VIII--Interview

In the self-report he had made a distinction between the history of man and learning about that history. In trying to explain it he turns to the difference between the "process of archeology" and the "goal of archeology". Notes that the selection shifts from the latter to the former. Returns to his tendency to examine writing for grammatical and logical structure and cites experience in school in North Carolina and efforts toiimprove his own writing. Keeps returning to stylistics... Has read only one book on archeology but does not remember the name; thinks it's Massada and tells of some of its findings...Had a chance to go on a dig while in North Carolina and passed it up as too expensive. Questions on the cream being skimmed off elicit recollections of travels in Italy and a visit to Pompeii and many random observations. Refers to lots of reading when young "all about" series. Stories of finds and mysteries interest him

Selection 6--"Mushrooms" by Sylvia Plath

Overnight, very
Whitely, discreetly,
Very quietly

Our toes, our noses
Take hold on the loam,
Acquire the air.

Nobody sees us,
Stops us, betrays us;
The small grains make room.

Soft fists insist on
Heaving the needles,
The leafy bedding.

Even the paving.
Our hammers, our rams,
Earless and eyeless,

Perfectly voiceless,
Widen the crannies,
Shoulder through holes. We

Diet on water.
On crumbs of shadow,
Bland-mannered, asking

Little or nothing.
So many of us!
So many of us!

We are shelves, we are
Tables, we are meek,
We are edible,

Nudgers and shovers
In spite of ourselves,
Our kind multiplies:

We shall by morning
Inherit the earth
Our foot's in the door.

Subject I, Code name R. Self-Report

Thought at first the poem was about snow, then found it was about mushrooms and then undecided what it was about. Doubts he "can handle" poetry, but thinks it puts a new light on familiar things; or gives it a personality "like this poem does to mushrooms." "Take hold on the loam Acquire the air " brought up associations with mushroom factory near which he lives when young and the "horrendous smells" it emitted. Recalled going to factory to get fertilizer because "mushrooms are supposed to make good fertilizer."...Thinks mushrooms fighting their way up through the needles and leafy bedding as humorous. "Diet on water/ On crumbs of shadow" arouses reflection that " I really don't know what mushrooms subsist on." Remarks that they "don't usually grow out in the full sun." "We are dible..." Thinks of the old wives tale and that some mushrooms are poisonous. "We shall by morning/ Inherit the earth/ Our foot's in the door " makes him think of science fiction movie of a giant mushroom.. somewhat ominous. "Sylvia Plath" it sounds "dowdy."

Subject I--Interview

"discreetly" in the poem aroused image not of a storm but of waking up in the morning and finding it all white when the day before it had been green, brown. Also images of mushrooms in my yard and "I could never get rid of them". At the Ponderosa steak house they always ask "Would you like mushrooms ?" "So many of us/ So many of us" arouse thoughts of The Birds and Bill Cosby's chicken heart expanding and growing and eating up him and New York city...taking on almost a personality so they are

destructive to people, and they are something to be feared because they have a will to take over the world. However, when questioned Subject denied that he saw mushrooms as analogous to people. Had not read other poems by Plath and did not know she had committed suicide, but when informed of this he remarked that "The phrase that jumps out at me ' We are edible" and I think of the vulnerability of a suppressed person... Thinks that now more meaning is emerging from the poem, confirming his earlier expectation that "there should be something more there,but I didn't see what it was."

Subject II, Code name C. Self-Report

"foot's in the door"... didn't know mushrooms were that violent; reminded of evergreens in front of her house and the mushrooms that grew up throough the pine needles. "Should through holes/ We ..." She doesn't like the "We" sticking out in the middle there, and comments that the whole poem brings out a lot of images and " if we leave title "Mushrooms' off of it and let someone read it, could tell what you're talking about ?" "Are they talking about mushrooms ?" "Crumbs of shadow" interesting, but it doesn't mean anyhhing. "We are shelves, we are/ tables, we are meek/ We are edible " That's what I think when I see a mushroom... a shelf and a table; is reminded of a place called Santa's village with mushrooms all around that you sit on. ... Overall thing's kind of creepy.

Subject II-Interview

Tape not always audible but confirms self-report. Doesn't like poetry; has never read poems by Plath; did not have poetry in high school; senses that much of the language of the poem was figurative and that " most poems take something ordinary and ruin it".

Subject III, Code name D--Self-Report

Mildly amused at the poem, but it elicits no thoughts and little interest.

Subject III--Interview

Had little recollection of any instruction in poetry. Thought they had looked at some Shakespearan sonnets; no course in modern poet and had never read or heard of Sylvia Plath. Asked about images the reading had evoked, subject said that although he had no pictures of particular objects, he did get some images of mushrooms growing... probably from seeing a segment of Charles Kuralt in the On the Road program (CBS) in which he stopped at a "mushroom mine" in Pennsylvania...they grow incredibly fast...harvested in three days... dark, dimly lit mine type of setting. "foot's in the door/ Asking little or nothing " yielded the image that mushrooms need little care to grow and "foot's in the door" struck him as funny and also the idea of rapidly multiplying mushrooms covering the earth; a little like forcing the door open; either that or an association with a very old Japanese horror movie called "The Attack of the Mushroom People." Long and somewhat incoherent remarks by the interviewer as to whether knowing identity of author would make any difference in the elicited imagery... Subject thinks that perhaps this might be so. Cites Poe as example of an author who would lead him to expect the morbid and the eerie. Also knowing that Kipling wrote a lot about India, Afghanistan and places like that would lead one to expect certain characteristics in his poetry.

Subject IV, Code name J, Self-Report and Interview combined (Alan C. Purves) Subject gave her most extended response to this selectio, almost 12 full pages of typescript. Immediately connects the mushroom to "woman" but is not interested

"I can take each part apart, but it seems like whole is one vision." spends a great deal of time describing visual imagery and making the metaphoric connection, for example, "Oh, that 'betrays us' if they are betrayed, they might be pulled out. They might be scrunched down, stepped on, they might be taken out. They might be thrown away. If someone saw them growing, if someone saw her growing, trying to reach for the air, with her foot on the earth, would someone betray her ? Would they kill her ? " Relates poem to herself and events in her life and that of her family. " And slice them up and fry them... on a certain level, that's good. . . civilized searching for mushrooms, people searching for mushrooms and eating them together as families and drink wine and can have it in butter and parsley can be very civilized."..Knows about Sylvia Plath's life and other works. "The Bell Jar" over her head in which she lived and her whole world became what she saw and felt through that bell jar." Rejects connecting the poem to atomic bombs, "...And I can see the mushroom cloud of the bomb; that has nothing to do with this, but I can picture mushrooms like a cloud ... because of taking over the earth and the meek shall inherit the earth." Mentions courses on Berryman and Auden taken in college, approach was biographical... also described experience with a group of poets whose approach was not primarily that of the courses she took. More participative. Early learnings also affects Subject's responses, especially in a drama class. Another teacher was a creative writer who "always was telling us to go into the deep well of ourselves" and with whom she corresponded after being graduated from Antioch. ...Comment by Purves: In all her education the less analytic approach has probably had greater effect because it appears to be more congenial. One might conjecture that her childhood experiences in dance and theater did a great to set the stage for her later rejection of an analytic appraoch even to leterature. Her citation of Maritain's Creative Intuition in Art and Poetry as an important book would tend to support this conjecture.

Subject V, Code name K —Self-Report

"What's 'whitely' ? Something like 'quietly'?" Our toes, our noses/ Take hold in the loam/ Acquire the air elcits: "I guess it is trying to say it's growing, getting a foothold and breathing through noses." Soft fists insist on/ Heaving the needles/ The leafy bedding elicit questions about reference to fists, needles, and the other words. No comment on the next two stanzas, but We dine on water/ On crumbs of shadow/ Bland-mannered asking/ Little or nothing elicits "That's good... What the is trying to do us show growth process of mushrooms." Subjects says he doesn't really know how to appreciate a poem yet, but "... there seems to be something good about being able to write and read poems. "

Subject V—Interview

Subject had some formal instruction in poetry as part of a literature course in Singapore. Like the course, especially the short stories, better than poems or Shakespeare. Also studied some poetry in grade school in Thai and some in Chinese. Had raised question about "whitely" because of its formal ending in ly. Images aroused were of little people trying to get out but only do it at night when nobody is looking at them. "They were pretty powerful, I think". Thinks poem is indirectly about people, not mushrooms... but "frankly, if mushrooms were not in the title, I probably wouldn't what he was taking about, a human or a mushroom really."

Subject VI, Code name G—Self-Report

Not enthusiastic about the poem; reminds him of his own efforts to use personification in his writing: "I've come up with some pretty peculiar images. This one seems a little more straightforward." Poem reminds him of blacks in the slums, Indians on reservations, Indians in India who are being oppressed and who will conquer by their numbers despite obstacles...Also reminds him of

dorm life: "All the time they keep me in the dark; a real damp, musty place and they keep feeding me bullshit."

Subject VI--Interview

Learned about personification in an English class. Had never heard of Sylvia Plath. In addition to the associations mentioned in the Self-Report, the poem reminded him of a song by Stevie Wonder called "race Babblings" from an album called "Journey Through the Secret Life of Plants."...Would have liked more concrete images...as in the last two or three verses. Used to read a lot of poetry but had other things to do: his studies and also bit bored with it...notion of shifting lines around to make the poem go better had not occurred to him, although "I do that pretty often in music, writing music."

Subject VII, Code Name S, Self-Report

Because the self-report was so detailed and extensive, it is reproduced as transcribed from the tapes.

S: O.K., the last reading is reading #6, which is a poem entitled "Mushrooms" by Sylvia Plath.
I'll read it now and give my response after I've read it.
(Reads).
O.K. My reactions to this...
I don't know if I understand what the author
or what the poet had in mind when the wrote this.
But, my first reaction when I started reading...
I suppose this would add the Freudian context to it...
but, the first words I read were
Overnight, very
Whitely, discreetly,
Very quietly
Whitely made me think of sperm.
Probably, because of overnight, whitely, discreetly
It all has a sort of a...private, sexual connotation...to it perhaps,
And, as I read on,
I'll just read the poem and comment as I go....
Our toes, our noses
Take hold on the loam,
Acquire the air.

And, that makes me think of
well, I thought of lying on the ground and having their toes in
in the loam, but
toes in the loam
wouldn't seem to make me think of anything but walking,
because if you're lying, you don't really
have your toes in the loam, at least (if you?) lie on your back.
And again I'm reading,
Nobody sees us,
Stops us, betrays us;
The small grains make room.
It's making me think that the whole process is very quiet and very
secretive.
And, it's right.
The small gains make room.
If you were there, then nature makes room for you.
The things that grow will grow along with you.
Reading on, and I quote
Soft fists insist on
Heaving the needles,
The leafy bedding.

Even the paving,
Our hammers, our rams,
Earless and eyeless,

Perfectly voiceless,
Widen the crannies,
Shoulder through holes. We

This reminds me of birth,
soft fists, like an infant,
Insists on heaving the needles,
the leafy bedding, pushing,
the idea of birth, coming through the womb.

Even the paving,
Our hammers, our rams,
Earless and Eyeless,

The infant at birth doesn't see and I'm not sure if it hears.
The idea of hammers and rams coming through.
Perfectly voiceless
Widen the crannies, shoulder through holes.

The crannies, again being the womb
with a shoulder through the holes
coming through.

I'm sort of surprising myself with my
my interpretation of this...
anyway, I read on, I quote.
We diet
Diet on water.
On crumbs of shadow,
Bland-mannered, asking

Little or nothing.
So many of us!
So many of us.

Then, again, birth with the water...
crumbs of shadow,
Bland-mannered

Well, I didn't have any immediate reaction to that, at least, in
the immediate context of the
of the interpretation I am giving this.

Asking little or nothing

At birth the infant can't and doesn't ask for anything,

So many of us!
So many of us!

The idea of so many people being born,
the population boom,
the growth of the many who are on the planet.
I continue to read and I quote,

We are shelves, we are
Tables, we are meek,
We are edible,

Nudgers and shovers
In spite of ourselves,
Our kind multiplies:

We shall by morning
Inherit the earth
Our foot's in the door.

S: O.K. now, unquote.
We are shelves we are tables
We are meek,
We are edible.

I would take that to mean we are used, many of us,
as objects, such as shelves or tables.
Many are meek, although not all, certainly.
We are edible.
The idea, perhaps, that many of us
fall prey to those who are more aggressive...
eaten, so to speak,
in a dog-eat-dog world.
...if you would want to equate that with
the concept...it reads,
Nudgers and shovers
In spite of ourselves
Our kind multiplies.

It is sort of the idea that even though if you get very pushey,
very aggressive,
all the way to some people being murderers,
even in spite of ourselves, we keep on going...
sort of the idea that man is...
the author seems to have the idea that man survives in spite
of himself.
In such a screwed up world,
man has made a screwed up world.
Man continues to live on...
I should say man and women, perhaps...
I'm sounding sexist here.
And, then the last stanza,

We shall by morning
Inherit the earth,
Our foot's in the door.

This sort of gets, perhaps, a positive tone to
off-set the last, or the next to the last stanza,

We shall by morning
Inherit the earth
Our foot's in the door.

I don't understand, really, why
this author goes from the attitude in the second to the last stanza,
to...of being a race that survives in spite of itself to
to...the idea in the last stanza that by morning we'll inherit the earth
and our foot's in the door...the foot in the door showing hope.
Or, winning the desired status of what mankind is or should be and
I don't see the relationship...
I don't see any reasoning there for why in the morning men will inherit
the earth.
And, why the foot is in the door, unless it goes all the way back to
soft fists insist on heaving the needles.
the leafy bedding
and, the idea that the innocent suffer.

S: Soft fists that push the needles and leafy bedding
will overcome the...overcome the
nudgers and the shovers that are...
that it refers to later.

I find it an interesting poem and I think
now having read over it and reflecting verbally into the
tape recorder here,
that I must have come across the basic interpretation of the poem
although I'm sure that
the author would disagree with me and point out
some differences that I'm...
I am convinced that it has to do with
there are so many of us and the plight of mankind.

But, basically, those are my reactions to the poem "Mushrooms"
by Sylvia Plath and I'm also aware that my giving a point-by-point
interpretation, perhaps, there is an interpretation that
I read into it, because I was
you know
reading it with the expectation of looking for interpretations,
rather than just reading it for pleasure.
But, without anymore comments,
these are my reactions to reading number 6.

Subject VII--Interview

Repeats the comments in the Self-Report, but in response to the query as to where he learned to interpret poetry, he launches into a long report on a course in high school English and a period of going through "some hard times emotionally" including a bout with alcoholism. Recalls that instructor encouraged him to try writing poetry in view of his apparently strong resistance to studying it in class. A response made reference to Existentialism, which he came across in his religious studies.

Subject VIII, Code name F, Self-Report

A long set of remarks on the poem touching upon the following themes: the negative mood of the poem; Sylvia Plath pessimistic, suffering, inferiority. The style of composition, uses of metaphor, apparent spontaneity in choice of words. Later interprets this to mean an appearance of spontaneity that conceals a high degree of structure. Interpretation of Sylvia Plath's psychology in terms of her father and his being a German; the second world war.

Subject VIII- - Interview

The follow up session dwelt a good deal on how the subject learned to construe poems as he does. He cites courses in poetry, also the Bell Jar and things he had heard about Sylvia Plath, her suicide, cruel to her father. In poetry courses learned to analyze a poem into stanzas, lines, syllables, etc. as well as for theme, to try to experience the mood of the poem. Gets emotionally involved when reading for enjoyment; tells how has tried to do some writing of a fictional sort himself, and the problem of evoking emotion.

Mushrooms

by Sylvia Plath

Overnight, very
Whitely, discreetly,
Very quietly

Our toes, our noses
Take hold on the loam,
Acquire the air.

Nobody sees us,
Stops us, betrays us;
The small grains make room.

Soft fists insist on
Heaving the needles,
The leafy bedding.

Even the paving.
Our hammers, our rams,
Earless and eyeless,

Perfectly voiceless,
Widen the crannies,
Shoulder through holes. We

Diet on water.
On crumbs of shadow,
Bland-mannered, asking

Little or nothing.
So many of us!
So many of us!

We are shelves, we are
Tables, we are meek,
We are edible,

Nudgers and shovers
In spite of ourselves,
Our kind multiplies:

We shall by morning
Inherit the earth
Our foot's in the door.

ANALYSIS BY ALAN C. PURVES

When the eight readers came to the poem, they appeared to divide themselves into three groups: literalists, associationists, and interpreters, whether these groupings reflect the uses of learning remains to be seen.

Literalists - David Grey

David's response to the poem was brief: aside from reiterating "I can't really say it brings any thoughts to mind at all," here merely commented "rather interesting...a little tale of the growth of mushrooms. They do grow fast." In the interview, he persisted in seeing the poem as being about mushrooms and did relate the poem to a television documentary on mushrooms and to a film, Revolt of the Mushroom People. Upon further questioning, he reported that when he reads poetry he tends to try to relate the poem to biographical data (e.g., Kipling in India) and on that basis interpret the text. He tends to see poems as communicative, but does not indicate whence that idea came Because he has no knowledge of Sylvia Plath he cannot interpret the text beyond its seemingly literal statement about mushrooms. In other literary studies (cf. W. K. Winnsott "The Intent: and Fallacy"), critics have indicated that the biographical approach is learned, David does not indicate that he was so taught. Other respondents (Furek, Hoover) use biographical data, as we shall see, but unlike David, they use that data as an aide to other interpretations, nonetheless, the literalist and the interpreter may use similar data.

Associationists - Rob Baptista, Karen Cargill

These two readers appear to assume that when one responds to a poem, one is supposed to call to mind as many associations as possible. At first Rob thought it was going to be about "the first snowstorm of winter," then realized it was about mushrooms and decided to "go through it a little

phrase by phrase." As he does so, he brings to mind a friend in Africa who wrote amusing letters, a mushroom "factory" it smells and the fertilizer that one bought there, the tales of poisonous mushrooms, and a science fiction film about giant mushrooms. He ends with a comment on Sylvia Plath's name, which 'sounds like a dowdy." In the interview, he expands upon these associations, but hints that he might have gone beyond them:

I do see more the idea now...when I read it I thought maybe there should be something more there, some meaning, but I didn't see what it was. Rob would appear to be the kind of reader who uses associations as a point of entry to the poem with a sense that mening is to be found and can be reached through association.

Karen, however, uses associations differently. Her initial comments are simply reactions:

"...didn't know mushrooms were that violent."

"...don't like the word we sticking out in the middle there."

Yet images also come into play, first are images of mushrooms coming up in pine woods near her house; a "place back home called Santa's Village with mushrooms all around that you can sit on"; "science fiction movies." Apart from these, she only says that the poem gives her the creeps, and ends her self report with:

What is it about poetry...don't ordinarily read it.

There are a few, because they take something ordinary and turn it into something else and most of the time they ruin it for me.

In the interview she expands on this comments, saying that she dislikes poetry because it took something ordinary that she likes and makes it "creepy".

Karen indicates that she had not read much poetry since elementary

school and had had no instruction. One might almost assume the same of Rob, yet one might infer of Rob that he could have learned the strategy of casting among associations and images until some combination fell into place and an interpretation ensued. Such a strategy is taught in some schools.

Construers - Kermit

A third reader appears to see the poem as a problem to be solved and seeks to construe the text literally. This reader differs from the first in that he senses a linguistic problem that is worth figuring out and from the second two in that he does not use personal associations as a part of figuring process.

His comments run:

don't understand...

What's whitely is that something like quietly?...

K: don't understand:

"Overnight very

Whitely, discreetly

Very quietly"

K: What's whitely is that something like quietly?

"Our toes, our noses

Take hold on the loam,

Acquire the air."

K: I guess it is trying to say it's growing, getting a foothold and breathing through noses.

"Nobody sees us,

Stops us, betrays us:

The small grains make room."

K: This next sentence I cannot understand:

"Soft fists insist on

Heaving the needles,

The leafy bedding."

K: Whose fists?

What needles?

I understand what that leafy bedding is...

it's where those mushrooms grow.

Are those needles the leaf(s)? that make up the bedding?

Are fists the fists of the mushrooms trying to get out?

"Even the paying

Our hammers, our rams

Earless and eyeless.

"Perfectly voiceless

Widen the crannies

Shoulder through holes."

K: What the author is trying to do is show growth process of the mushroom.

"We dine on water.

On crumbs of shadow,

Bland-mannered, asking

Little or nothing."

K: That's good. Good!

"So many of us!

So many of us!"

"We are shelves

We are tables"

K: That I don't understand.

"We are edible"

K: That I do.

"Nudgers and shovers
In spite of ourselves
Our kind multiplies:
We shall by morning
Inherit the earth
Our foot's in the door."

K: It's amazing how such little, meek things can multiply and conquer the world overnight and be so persistent in doing it. "nudgers and shovers"

K: Poems is one thing I don't really know how to appreciate yet. It's like another world waiting to be explored. Just because I don't know it, doesn't mean it doesn't exist said Pablo Picasso, I think he says that... You've heard of those people good at writing poems...There seems to be sometning exciting and good about being able to write and read poems.

K: And, someone say(s) he's so good, he write(s) poems...Straight away you got an image of a very literary guy who knows his words...who knows his English...his literature, art...that's what it is.

What's the use for poems?

That's a good question.

Of course, there is...

Just because you don't appreciate it doesn't mean it doesn't have any use.

Someone somewhere reading this passage might really like and enjoy it.

K: What I'm saying is personally I don't really appreciate.

Kermit's comments remain at a literal level and he does make sense of the text, that it is about mushrooms. Kermit takes the poem unmetaphorically and proceeds to work through the task of comprehending it on its own terms. In

the interview, he admits that he saw some personification of the mushrooms, but he construes the personification to aid in the understanding of what happens to mushrooms.

Clearly it is possible to use metaphors such as are in the poem to serve an understanding of the ostensible content. But as we shall see with the next set of readers, the metaphors can be read in an opposite fashion. For Kermit, phrases like "nudgers and shovers" help the reader to understand the operatives of mushrooms; he did see images of "little people," as he says in the interview, and had it not been for the title, he might not "know what he was talking about whether a human or mushroom really." It would appear that Kermit was guided by the title, assumed that the poem was about mushrooms and proceeded to construe it from that point. Kermit is not simply a literalist: he assumes a reader has to work to create meaning and sets about the task. In his interview he refers to his education in literature, which included some poetry, taught by British teachers in Singapore. One might hazard that these teachers were influenced by I.A. Richards and taught the importance of "the plain sense meaning." If so, Kermit learned well.

The Analogizers - Furek, Hoover, Powell, and Sims.

If the construes take the text and title at face value and seek to make sense of both, another kind of reader operates from a quite different assumption. Four of the eight readers begin with the premise that the poem is not about mushrooms, that the personification does not serve the purpose of explaining fungi, but the opposite, that the mushrooms are personified to make the reader consider people. One, John Furek, begins his response:

She starts off by talking about mushrooms, but I think later on she is ... also metaphorically talking about people.

Jane Hoover:

Mushrooms. Of course, it's talking about mushrooms, but more than

mushrooms...of, perhaps, herself, of woman, of growth and unseen...

Gary Powell:

I wonder if she is talking about mushrooms, or some specific group...

Steve Sims:

I don't know if I understand what the author or what the poet had in mind when they wrote this, but my first reaction when I started reading...I suppose this would add the Freudian context to it...

As one can readily see, although each reader begins with the same broad assumption about how to make meaning, each goes off into a distinct realm of interpretation. John Furek's realm is partially determined by his prior knowledge of Sylvia Plath, and he sees the poem as autobiographical:

It's a feeling of suffocation, in a society where she can't make herself known; she just can't get along with society. She's always being crushed by society.

His interpretation appears to be based on an over-all sense of the symbolism ("Generally, when she writes about something there is another theme leading through it.") and his knowledge of Sylvia Plath's German background. He also discusses her style, both the choice of words and the stanza-structure, both of which he claims appear caulers but result from croft. In his interview, John Furek cites his collect literature courses as a cause of his reading the text metaphorically or symbolically, and the biographical approach came from a course in poetry when Plath was studied. Another course in poetry gave him the sense that style is important, as did his own attempts at writing. It would appear that John Furek was clearly taught to approach poetry in the way that he did, and that the approach is so ingrained that it becomes his normal fashion.

Jane Hoover sees the poem as dealing with women and with people in general. Her response, the longest of the group, mingles the personal, the literal, and the analogy as the following excerpts indicate:

It seems at first as if what is growing would be very beautiful, very

"whitely...."discreetly...."quietly"

Those words connote to me something of beauty happening there, white, discreet, quite. Perhaps, also, something....invisible...lost... secretive...something that can't happen by day...it happens by day.... to be growing...perhaps, there's something in the day that won't allow for this thing to grow.

And, it has to be done in secrecy....Overnight our toes...Our noses.... Take hold on the loam....Acquire the air...

I love "our toes our noses....Take hold on the loam, because you can picture a mushroom coming up....the rounded part....the mushroom like a toe....and nose...."take hold on the loam,...and, the white coming against the brown of the earth...and pushing through, acquiring, reaching the air.

Uh....first you have to....first this growth has to come from secrecy through the brown earth....and white....and it is white through the brown earth in order to...to...gain the air. You can picture the loam falling away, almost on top of this mushroom that is coming up...or, whatever is coming up....or, our own breathing, our own breathing, having to push away this dirt. And, the night....secrecy....beauty....to reach for the air. And what does the air mean? What does the loam mean? Both are needed. In order for the mushroom, the plant, the person to be, one has to take hold on the loam and acquire the air. Both are needed. And the growth is needed. Mushrooms just can't stay underground. They come forth.

"Nobody sees us, stops us, betrays us; Oh, that "betrays us" if they were betrayed, they might be pulled out. They might be scunched down, stepped on....They might be taken out. They might be thrown away.

If someone saw them growing, if someone saw her growing, trying

to reach for the air, with her foot on the earth would someone betray her? ....If they saw that prospect, what would they do....kill her? A mushroom is something of decay, and ruin, and danger....something sour, in a way, some contagion in a way....It's not all flowers and beauty and truth...There's some....a certain truth, but it's more of a bewitching kind or a harsher truth....it's maybe an ugly truth. People don't like to see this....this mushrooming....they would prefer to have....just like weeds....They would prefer to have nice thoughts....They would prefer a woman to be nice and lovely....They would prefer her not to have these other kinds of things that are happening in her....But "the small grains of earth make room" for this. "Soft fists insist on..Heaving the needles, The leafy bedding."
Again, you see the soft fists of the mushroom coming through...And, I also see the soft fist of a child being born, coming out with its... with its hands curled up at first
We diet on water....I guess that's like bread and water. What do we eat? nothing....And, what are we nourished by?...nothing...And, yet everything, because water is essential because...and yet a diet of bread and water is like a prisoner's diet. And, in a way the mushrooms are like prisoners....could have been prisoners down underneath the earth on crumbs of shadow...There are the crumbs of bread and shadow, you see.... not in the light, in the dark again, there's something unasked for, something hidden, shadow again implies this grey part of life, this more evil or unknown, darker side, darker side
We diet on water....On crumbs of shadow, Bland-mannered, asking Little or nothing. Oh! It's sad! The mushrooms....they don't ask to be given wonderful things to grow, bland-mannered...and a bland diet, sickly, again, a bland diet is for the sickly, the ill, you don't want to ask for a lot

"Asking little or nothing"...These ebbings inside of us, the darkness inside of us, of her, Sylvia Plath, is bland-mannered, isn't asking to be nurtured, but only asking to come up through the earth to acquire a little air....is only doing it because it's natural, it comes through, it has to happen, but it's not asking to be seen. In fact, if it were seen it might be destroyed, it might be wiped out.

And it's so sickly. No one has looked at it. And, again it's ironic. But, if it did ask to be seen, it might be stamped out, whatever it is.... Mushrooms are....

And, "So many of us!..So many of us!" I have all these feelings in me and at the same time there are....so does everyone. There are so many of us! We all of us have this going on inside of us...ourselves...and when you look at mushrooms in the woods they are all coming up in groups....It's rare that you find one alone.

There are so many of us! In fact, the kind of soil, wetness that nurtures a certain kind....a place where mushrooms can grow....the cellars where mushrooms grow...and the places and woods where mushrooms grow....in compost, cow dung, horse dung....and where it all grows....a certain kind of environment that fosters that.

We are meek, We are edible...Oh! You can do us in by eating us! We're meek....We're edible and we're shelves for people to...people put things, They use the shelf to put things on....tables are used to serve things. So, we are not independent in ourselves...or making something of our lives...we are used by other people. Other people put things on us. Other people eat off of us. In fact, they eat us. And, we're so meek and we don't know who we are of what we are about and we've become something for other people to put their own feelings on....to make something

of us. We are nothing. We are meek. We aren't showing people who we are. We're going to be consumed.

"In spite of ourselves could be used...You could say, "We are nudgers and shovers in spite of ourselves:...Maybe we don't want to be nudgers and shovers in spite of ourselves, but the only way to exist is to act like that...or we could also say in spite of ourselves, because there is a comma there.

"In spite of ourselves," comma

"Our kind multiplies:" I mean, you wouldn't think that this kind of a growth would multiply, because it is so meek, because we diet on water, because we are voiceless, earless and eyeless, because we have soft fists, because we are white and discreet and grow in the night....

You wouldn't think that our kind could multiply, so inspite of ourselves we do. And nudgers and shovers in spite of ourselves, because in order to live we have to...in order to live, we've got to go against this nature that she seems to be portraying here...of being put out, being stamped out almost before we can...we can....come forth.

Then, we can inherit the earth, but inheriting the earth. It's a way of being...Sad...Put down...Powerless..to know itself. Our...At the same time it's necessary that this happen. It happened to Sylva Plath, of course, her....suicide. Death...It had to happen...Perhaps, how.... she could have gone through that mushroom state without that having to happen,..That's what I'm saying:

Our foot's in the door We're coming in there...We're going to...we're going to grow...We're going to get somewhere...Our foot's in the door. And, the mushrooms have to show themselves and they have to be known but they didn't have to...I'm sorry that they did take her over.

The Bell Jar...like the Bell Jar...over her head in which she lived... and her whole world became....became...what she saw and felt through that bell jar...and...these mustrooms are taking over her very being. I have a feeling that I want to....even though I know...I mean....I want to look at my mushrooms at those things in me...and I have...but when I see it in the end and I see her suicide like that...and...I see those mushrooms growing all over and inheriting the earth

Our foots in the door..I have a feeling like I want to just go..."Pull them all out!" "Pull them all out"

I want them to grow...and yet I don't want them to inherit the earth. They need to grow next to wildflowers and weeds and cultivated flowers. And grass and earth and water and sea....I mean it all fits together, not just the mushrooms...It's not just that. And I can see the mushroom cloud of the bomb....the atom bomb or the hydrogen bomb...that has nothing to do with this, but...I can picture mushrooms like a cloud.... I mean....that's not in this poem but when I picture mushrooms it leads me to that, too, because of taking over the earth and the meek shall inherit the earth. There's that in the poem...It's happening here, too. It's not at all the mushrooms of which Sylvia Plath is speaking....It is not at all that experience. It's an entirely another realm of experience. I think for a long time I dwelt in that realm and I need to go back to it and I need to be a part of my life...but I also feel as she did that too consumed....too meek...too edible...too used...too voiceless in that kind of an....if I only lived that way, physically, making of my family my life....making an eating life of civilization in a way...wining and dining...and mushroom hunting...and gourmet dishes...and that side of it is one side of life...but the necessity

> to make art...to write poems...or to feel that bleeding earth, to feel that...those...the...ugliness, the ruin, the decay, the sadness, the...as well as the beauty...all the underlying layers, that underlay our own skin...and the underlying layers of textures and that underlie feelings and attitudes and the veneer of civilization, the necessity to keep on rooting in that...to delve, dwell in the unconscious, to explore it, to go below the surface, to live there. But not in the way of this mushroom poem, or the way of the Bell Jar but...in a way in which one's perception is heightened, one's consciousness is more aware, one sees more, one is able to have ears...and eyes...and a voice...to behold...and not to nurture on decay...not to nurture on one's own decay, but to be nurtured by...the all...all of the earth. Because this reminds of the Bell Jar, one's own stench inside of that bell jar, one's own stink and decay. This mushroom poem reminds me of that. Mushrooms.

The response is like a tapestry, weaving personal reactions, an empathetic description of mushrooms, references to Plath, and interpretive statements. Quite different from the other analogizers. Hoover's response might be placed in its own category for her training is less that critic and more that of the poet. Her schooling includes courses on poets which included biography, metrics, and interpretation, but more important she was a member of a poet's workshop when they "don't take apart a poem" but comment on its various aspects, and worked with a poet who was "always telling us to go into the deep wells of ourselves. Most important, she believes herself influenced by Jacques Maritain's Creative Intuition in Art and Poetry, and her response shows clearly the influence of Maritain, and his refusal to divide the personal

from impersonal and subject and object. Clearly Hoover's interpretation shows a covering line of objective and subjective, but all the time moving towards an interpretation.

Gary Powell, on the other hand is quite brief even though he, too, has written poetry. After his initial comment and a brief reference to his own attempts to personify an animal or object in poetry, he says

> I don't know who she is talking about specifically, but... I think she could very easily be talking about Blacks living in slums, Indians living on reservations, Indians in India...who are starving...anyplace, who are being oppressed.

He is unsure whether the poem is angry or sympathetic, and ends with a humorous comment. In the interview he indicates that he learned about personification in high school English as one of "the structures...of language." Clearly he has learned and uses a way of reading, even if he is no longer, as he says, a reader of poetry.

As was noted the final reader, Steve Sims, assumes a Freudian approach to the text, and proceeds to alternate between evocations caused by the images and an interpretive stance. He sees the mushrooms as being like sperm and then infants being born. Later, he moves away from the Freudian position to the following:

> We are shelves we are tables
> We are meek
> We are edible.

I would take that to mean we are used, many of us, as objects, such as has shelves or tables. Many are meek, although not all, certainly. We are edible. The idea, perhaps, that many of us fall prey to those who are more aggressive...eaten, so to speak, in a dog-eat-dog world. ...if

you would want to equate that with the concept....it reads,

Nudgers and shovers

In spite of ourselves,

Our kind multiplies.

It is sort of the idea that even though if you get very pushy, very agressive, all the way to some people being murderers, even in spite of ourselves, we keep on going....sort of the idea that man is...the author seems to have the idea that man survives in spite of himself. In such a screwed up world, man has made a screwed up world. Man continues to live on...I should say man and women, perhaps....I'm sounding sexist here. And, then the last stanza.

We shall by morning

Inherit the earth,

Our foot's in the door.

This sort of gets, perhaps, a positive tone to off-set the last, or the next to the last stanza.

We shall by morning

Inherit the earth

Our foot's in the door

I don't understand, really why this author goes from the attitude in the second to the last stanza to....of being a race that survives in spite of itself to....the idea in the last stanza that by morning we'll inherit the earth and our foot's in the door....the foot in the door showing hope. Or, winning the desired status of what mankind is or should be and I don't see the relationship....I don't see any reasoning there for why in the morning men will inherit the earth....why the foot is in the door, unless it goes all the way back

to soft fists insist on heaving the needles...the leafy bedding... and, the idea that the innocent suffer. Soft fists that push the needles and leafy bedding will overcome the...overcome the nudgers and the shovers that are....that it refers to later.

I find it an interesting poem and I think now having read over it and reflecting verbally into the tape recorder here that I must have come across the basic interpretation of the poem, although I'm sure that the author would disagree with me and point out some differences that I'm...I am convinced that it has to do with there are so many of us and the plight of mankind.

But, basically, those are my reactions to the poem "Mushrooms" by Sylvia Plath and I'm also aware that my giving a point-by-point interpretation, perhaps, there is an interpretation that I read into it, because I was...you know...reading it with the expectation of looking for interpretation, rather than just reading it for pleasure.

Unlike the other three readers in this group Sims seeks to construe the interpretation, to work through it logically in the way that Kermit did. He also reveals at the end that this is a particular way of reading and he might have chosen another. In the interview he retraces the process and indicates that the Freudian approach served appropriate until the last part of the poem, when the broader interpretation emerged. He also comments that he thinks the poem "existential" and relates the poem to some theology courses. He also indicates that he learned to read poetry in high school and wrote for a while, and wonders what the poem is "supposed to mean," as if there is an accepted interpretation.

Summary

As one reviews these eight responses, one gets a sense that each reader

in his or her own way "learned" to ready poetry in a particular way, whether it be to take it literally, to see it as a springboard for association, to see it as communicative writing, or to see it as the basis for interpretation. Each of the modes of approach has its basis in some aspect of schooling, and each of the readers has retained what was taught as well as a few pieces of information that can be brought to bear. The information, however, appears to be less firmly implanted than the way of reading a poem and the way of thinking about it - as nonsense or as a serious art form.

You accept the notion of schemata in reading, one can see that each of these readers has acquired a poetry reading schema that is put into use when a new poem is confronted. It is difficult to determine whether this "use of learning" should be considered application or interpretive. It is a mode of thought applied to the interpretation of new texts. Clearly, however, it appears to be powerfully apprehended and summoned into use almost without being willed.

Notes from March 12, 10-12 meeting with R. Spiro, L. Altenbernd, A. Purves, H. Petrie, J. Carey. (I hope I identified the speakers correctly.)

There were some introductory comments on being "flabbergasted" at the "incoherence," "lack of knowledge which implies no understanding," and specific reference to Cargill's comment that "most poems take something ordinary and ruin in."

Spiro: general comment on the impoverished state of students in the use of knowledge as a true background, using prior knowledge as a focus. Used the blind man with probe analogy--the blind man understands something out there in terms of what he feels, but he could not recall the exact sensations felt in the hand that promoted that understanding. Spiro was skeptical that something would be found in the protocals; the minimum level of technical expertise and skills in the subjects was commented on. Knowledge can't be used as a background without a high level of expertise. Suggested that superior students, the overlearners, be examined first to see how they use their skills, then go to the types used here.

Broudy: As pointed out, we were looking at the stuff...not supposed to find...if the input is to be used later, may have to be used by selective forgetting.

Carey: It seems that when people read news, they don't read for information, but for the dramatic context of news and they then re-context into social conflict. [He then noted that economics article asked reader to consider his fiscal ideology, the neutrino asked for reader's stand on evolution. Ballet and poem were accepted or rejected according to how reader perceives himself--cultured, uncultured.] So what is the right context to put these articles in?

Purves: Noted that archeology articles falls between the two contexts:

Purves: Noted that archeology falls between the two contexts: social conflict and culture in newspapers which provides its own context. Elicited comments on humankind as a herd.

Broudy: Suppose we say context supplied when read, what do you take as materials used to reconstruct and supply context?

Carey: First, reader's feelings about contemporary ideologies and struggles are separated out (reference to Eliz. Miller in Germany polls). So the degree to which these stories can separate out these struggles does fit into scale, interpretive as an example.

Broudy: If they have no identification? Do they ignore the story?

Spiro: Have to think of the reader setting context. First, attitudinal, self-related heirarch of beliefs. Second, on a more primitive level, a cognitive context--what does the author expect, assume? Third, reader asks how should I think of this, look at the internal consistencies of argument in the stories, appeal to common sense?

Broudy: How would you describe psychology of person starting this task?

Spiro: What are the preconceptions the reader has of what he thinks he's supposed to be doing, and preparation to do them?

Broudy: Stands taken on ideological conflicts, but there was a shift to something different, something different was called for in the ballet and poem readings. We got the feeling readers didn't understand the context, that for a poem the use of metaphors was called for, but readers refused to use metaphors, to play the game.

Spiro: The readers didn't get it, couldn't, can't use metaphors if they don't know where to start.

Purves: Look at the Baptista and Gray. Two words alternate in Baptista, "interesting" and "understanding." They were clearly concerns of his, whereas Gray labeled the Venus story silly, and talked about his ideas of economics. In the followup, it would have been interesting to ask Baptista where he got the idea to come up with as many free associations as he could in the poem--he never put them together though. Gray doesn't do this--looked for amusing aspect.

Spiro: Poetry can't be taught in schools very effectively.

Broudy: Mentioned time it takes youngsters (8-9) to think of a metaphor, even obvious one like garden hose and snake.

Altenbernd: But that's contrary to primitivistic lore on this.

Carey: There are different sense of the word "understanding." Metaphors like "my blood boils" used all the time but not as a conscious employment of metaphor.

Spiro: But that is not creative use of metaphor. If you strip away memory demands, etc., children have ability to deploy early, it is context that inhibits their use of metaphor.

Petrie: Mentions figurative language in black kids. explicit, reflective knowledge not there, but highly complex word games, highly creative

Carey: Even in literary work, metaphors cliches. We're asking people to be self-conscious with knowlege of metaphor.

Broudy: We have a poem--it's a signal that one goes into metaphor mode of apprehension--why didn't they use it?

Petrie: They didn't learn about poems that way. When they didn't have it (a mode of interpretation), they reverted to social-cultural, ideological, general world view. You could almost predict what they would bring to bear by social-cultural background. To interpret this is to use the metaphor of Hofstetter's record player, record, even recorder. There is the context of record players, their fidelity, etc; the records, how made; who recorded.

Spiro: When you don't know what player to use, default, fall back.

Altenbernd: Summary. Tacit, logical positivist assumption: there is a true text here and general human intelligence should be able to discover it. A variety of things interfere with subjects knowing objective truth in text--ignorance, prejudice, self-interests, lack of strategy. Then the question is how does one lead readers to transcent & see text import?

Carey: Tried to examine different strategies employed--disappointment when readers have no strategies. There is a common, interpretive strategy to deal with news--dramatic, ideological. Not surprised when then don't use knoledge of disciplines. Ask themselves, who am I relative to this topic--an evolutionist, etc.?

Spiro: Takes issue with Altenbernd's assumption. Disagrees there is one truth--there may be several meanings and it's OK if they get to one. The interferences are not things that get in the way, they are what people do when they don't understand, and they also hit on more local things like herd instinct. Suspension of belief, which is needed, isn't possible here to justify interpretation, they can't do it.

Altenbernd: Default would be a better word than interference.

Purves: Many default records here, eg. Hoover & economy--feminist guilt; Cargil, didn't understand terms, so free associated.

Broudy: We're academics--is it fair to say that we expected a minimum of construal of meaning of texts? Weren't we shocked at default here? Is it that we are so committed to objective construal of printed word, that we expect too much of graduate students? We expect them to have stencils and to use them.

Spiro: We don't train them that way--not in tests in school to use stencils, processing responses. I would have thought that lots of stuff would have been done on situational, etc.

Broudy: Learning by doing--Dewey. Connoted to some don't rely on language--language is a barrier. Here we're giving them language samples, going the other way & assume this is a minimum they should be able to do.

Petrie: A couple did overlearn--the poet and astronomer came through--replicative use. Relate back to Broudy's comment on expectations and Lynn's positivist assumption. This reminds us not to be positivist in this sense. We're playing this through our academic machines. They're interpreting and trying to understand and we're interpreting.

Spiro: But clearly something is lacking no matter what our expectations.

Altenbernd: Logical, positivist assumption is provocative but applicable. The Venus title reference clear to all of us, but text doesn't refer to this. There is the satiric reference to "gentleman's agreement" in the use of "gentlepersons". No one agreed with A.'s seeing irony of Venus as ideal female having parts named by male chauvinists, and pointed out that mythological female names were being used rather than real females.

Broudy: We have a favored context approach: stencil, schemata, interpretations, defaults of ideological and local types. Thesis: tacit as a subsidiary notion. I would expect that they would not be able to recall exact text they learned about Botticelli but a response would be there that wouldn't have been there without knowledge of Botticelli. What are the signs of this, what indicators back this up?

Various comments: Teutonic with Plath, Venus title ignored, degenerate news stories.

Carey: All I would expect from anyone is some construing in any way, with some structure, some evocation of schooling and knowledge, but struck by how unable to put in ideological terms, and how they felt badly about not knowing physics, economics but not badly about knowledge of ballet and poetry.

Spiro: Meta-cognitive Fix-up--a strategy not used--not even in Follow up interview was there an attempt to get more info to help

Petrie: Secondary goal of school is to get this openness to get info to help clarify

Purves: Notes that they didn't attack author or investigator either for not giving more info or saying better what they meant

Broudy: How to proceed now? There is no fixed methodology here, outcome is possibly a monograph.

Petrie: Two comments: tried to go through materials with categories in mind--difficult to do--no applicative particularly. Construal rather than applied problem found. Recommends go back to original data and see how much can be judged in these categories.

Broudy: Suppose you were to take one person and do Petrie's recommendation.

Spiro: Offers own bias--these protocols. We've seen how schooling affects--no course, no info; development of interest and confidence. Think about what we would be looking for--wouldn't be found here--set up texts to see how different stencils would work, eg. engineer reconstructs differently than LAS major.

Broudy: Suppose someone interested in doing this. Is it worth investigating in more systematic way, especially task construction?

Petrie: There are two ways to do this. One person look at one reader over al protocols; or one person look at all eight over one selection from readings.

Spriro: Pick 2 passages, say dance & archeology and give protocols on those to look at.

Petrie: Would have liked to see a sense of cognitive and personal structure brought to this. Take 2 passages, then a page per person to get hypothesis of background of all 8 persons. Categories may not help. But one more pass at data to find or suggest crucial things not used, eg. task structure.

Broudy: What happens to explicit schooling? Want to throw some light on that. Is it worth doing? Agrees this first stuff is inadequate. General education down the drain if we can't justify that it works.

Spiro: Cognitive psychology--has great import here, greatly neglected area.

Petrie has no time this spring, will be willing to work on this this summer. For Spiro it is related to what he's doing, would like more systematic approach and will think about experiment for this.

Broudy: Two items will be selected, background on all 8 subjects, and original protocol responses will be distributed.

APPENDIX A

An interesting "application" of the uses of schooling was made in a venture to strengthen orthopaedic education by the American Academy of Orthopaedic Surgery (AAOS). According to J. A. Farmer of the University of Illinois, educational consultant to the project, in a letter dated March 6, 1981,

> "...the members of the faculty found conceptualizing and handling the levels of abstraction particularly challenging. Initially the topic of the example was identified as 'effects of shape on bending deformation.' This was revised to read '...management of total hips in patients post-operatively with adequate understanding of forces on the hip.'"

The levels of abstraction to which Farmer refers are as follows:

I. Theories and generalization from the disciplines (e.g., biology, biochemistry).

II. Theories and generalizations about the applied field (orthopaedic surgery).

III. Practice in the applied field (technology of the surgery).

In describing the use made of these levels by AAOS Biochemichanics Educator's Faculty (four orthopaedic surgeons and four biochemical engineers) Farmer says:

"After considering several alternative 'entry points', the members of the faculty decided to use Level III... and to have an orthopaedic surgeon take the lead. It was found that only the orthopaedic surgeons, following dialogue with each other and with the biomechanical engineers, could make what the whole faculty would agree were substantive and acceptable contributions to what was put in Levels II and III. Only the biomechanical engineers, following dialogue with each other and with the orthopaedic surgeons, could make what the whole

faculty would agree were substantive and acceptable contributions to what was put in Level I."

In more general terms, practice or ginal "application" of knowledge to the particular situation, requires both a technology and a set of theoretical principles derived from the basic disciplines, which, in turn, have been milked for their relevance to a design or engineering level of practice. The point is that not all of the contents of either the basic or the engineering disciplines had to be recalled as learned in order to be used interpretively or applicatively.

BROUDY LEVELS OF ABSTRACTIONS

I. Theories and Generalizations of Basic Science Discipline

A. Fundamentals of the Discipline

B. Engineering Relationships

II. Theories and Generalizations of Orthopaedic Surgery

A. Orthopaedic Principles

B. Rules and Regulations

C. Do's/Don'ts

III. Practice of Orthopaedic Surgery

BROUDY LEVELS OF ABSTRACTIONS

Example #1 - Orthopaedic Bone Plates/Effect of Shape on Bending Deformation

I. Theories and Generalizations of Basic Science Discipline

A. Fundamentals of the Discipline

1. The modulus of a material depends on its grain structure.

2. A relationship exists between stress and strain in a material.

3. The stress in the interior of a beam varies over its cross-section, being greatest in those "fibers" furthest from the neutral axis.

B. Engineering Principles

1. The stress in a bending beam, σ , is equal to the bending moment, M, times the distance from the neutral axis, y, divided by the area moment of inertia. That is,

$$\sigma = \frac{M\,y}{I}$$

where y is maximum at the outer fibers.

2. The area moment of inertia is that property of the cross-sectional area that accounts not only for the amount of area, but the distribution of the area. For a rectangular beam the area moment of inertia is

$$I = \frac{BH^3}{12}$$

where B is the width of the cross-section, H is the height. The neutral axis is located at the centroid of the cross-section.

3. Bending stiffness is a product of modulus and area moment of inertia.

4. Plate rigidity depends upon area moment of inertia.

5. Plate deformation depends upon the bending moment, beam (plate) length, modulus and area moment of inertia.

II. Theories and Generalizations of Orthopaedic Surgery

A. Orthopaedic Principles

1. Primary bone healing requires rigid fixation which can be provided by a suitable bone plate. Malunion can occur in the absence of rigid fixation.

2. If using a plate, the opposite side causes compression.

Increasing Levels of Abstraction

B. Rules

1. Use six cortices to attach plate on each bone.

2. Do not use a plate on a surface opposite a comminuted fracture.

C. Do's/Don'ts

1. Don't use a little plate on a big bone.

2. Do use a thicker plate on a big bone.

III. Orthopaedic Practice

Entry point. Tasks:

1. Select appropriate bone plate.

2. Apply bone plate.

3. Buy plate from distributor

4. Manage patient with long bone fracture and treat any complications.

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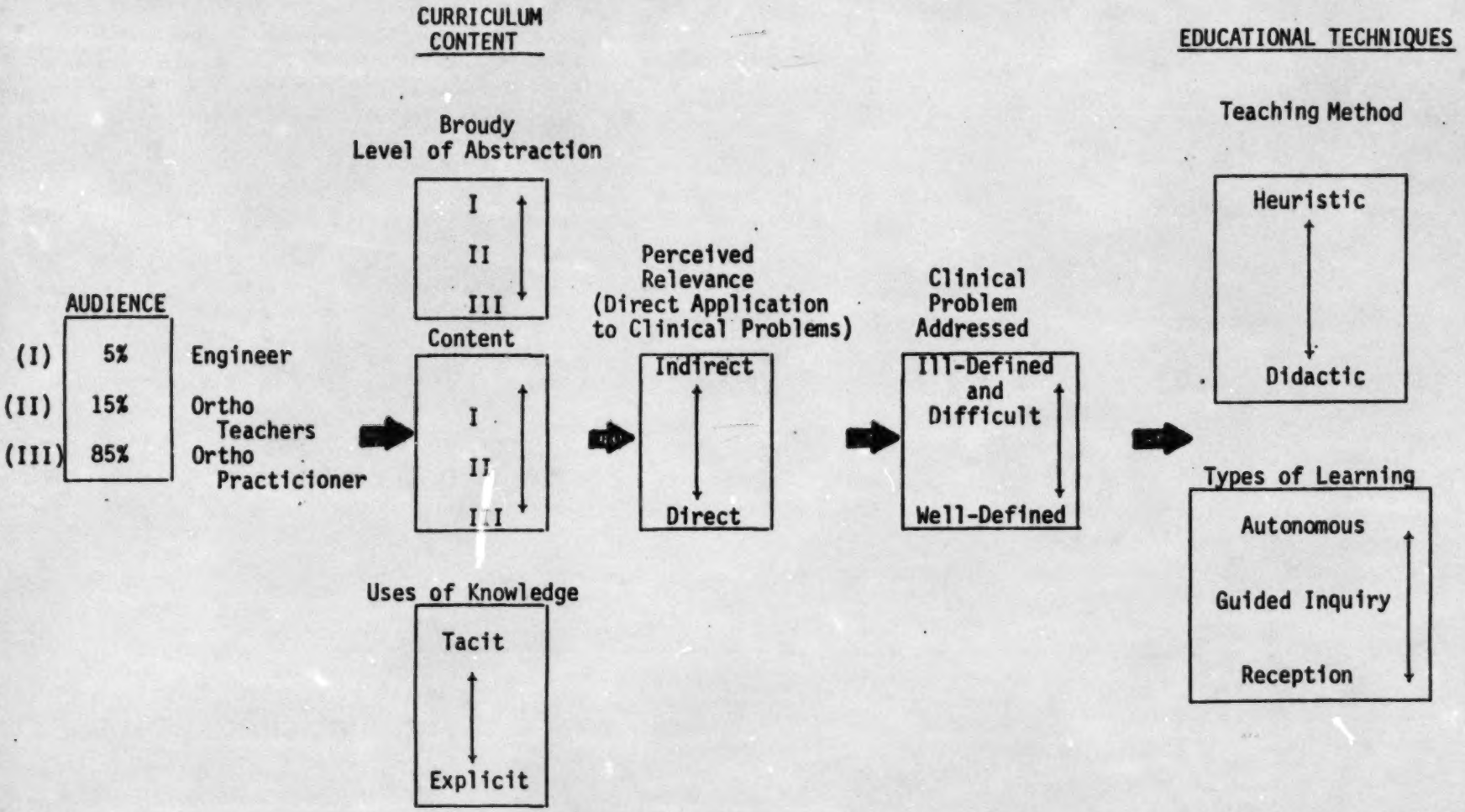
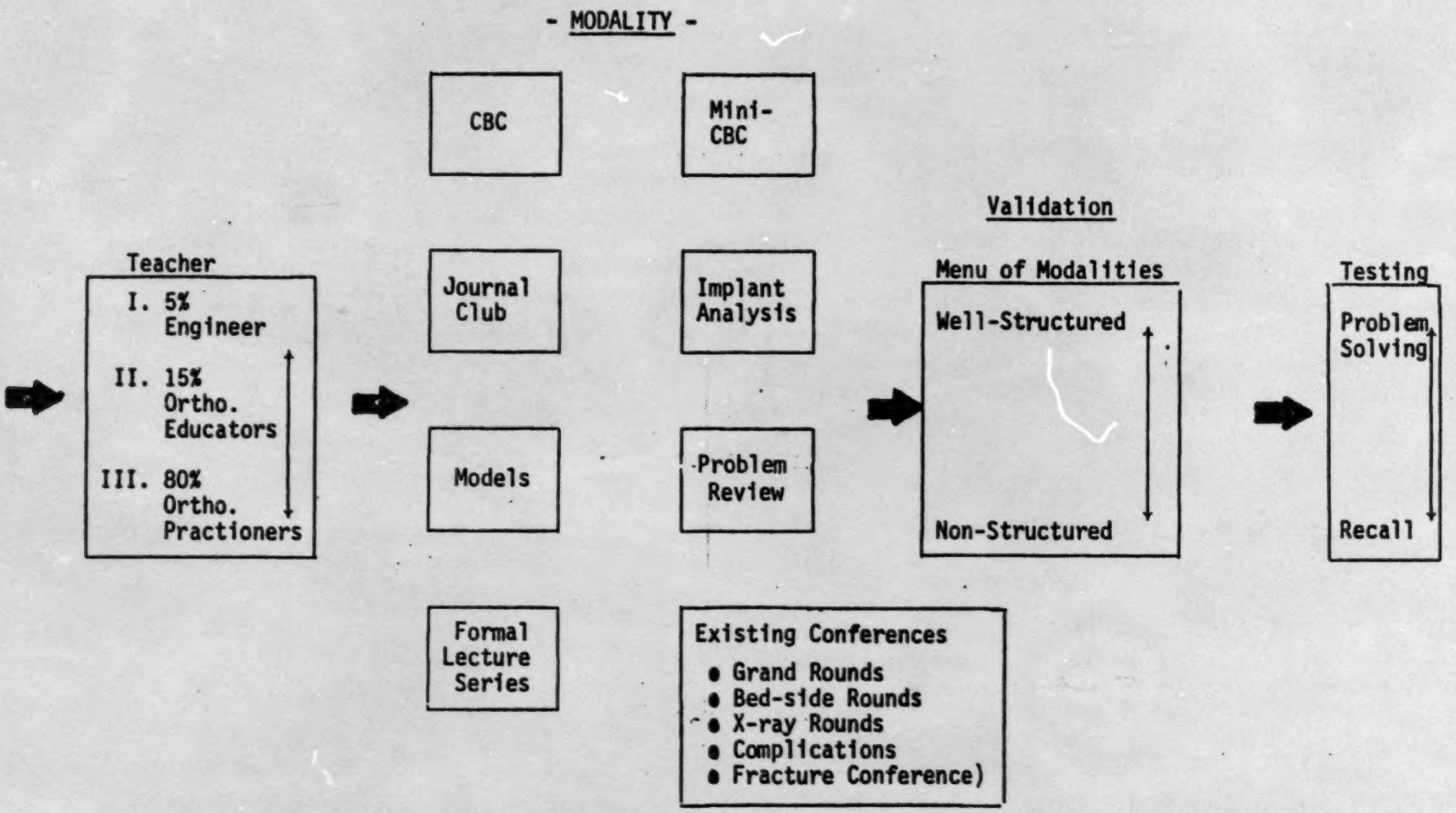
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